A STUDY OF DIFFERENTIAL FERTILITY IN BRAZIL

By

JOHN VAN DYKE SAUNDERS

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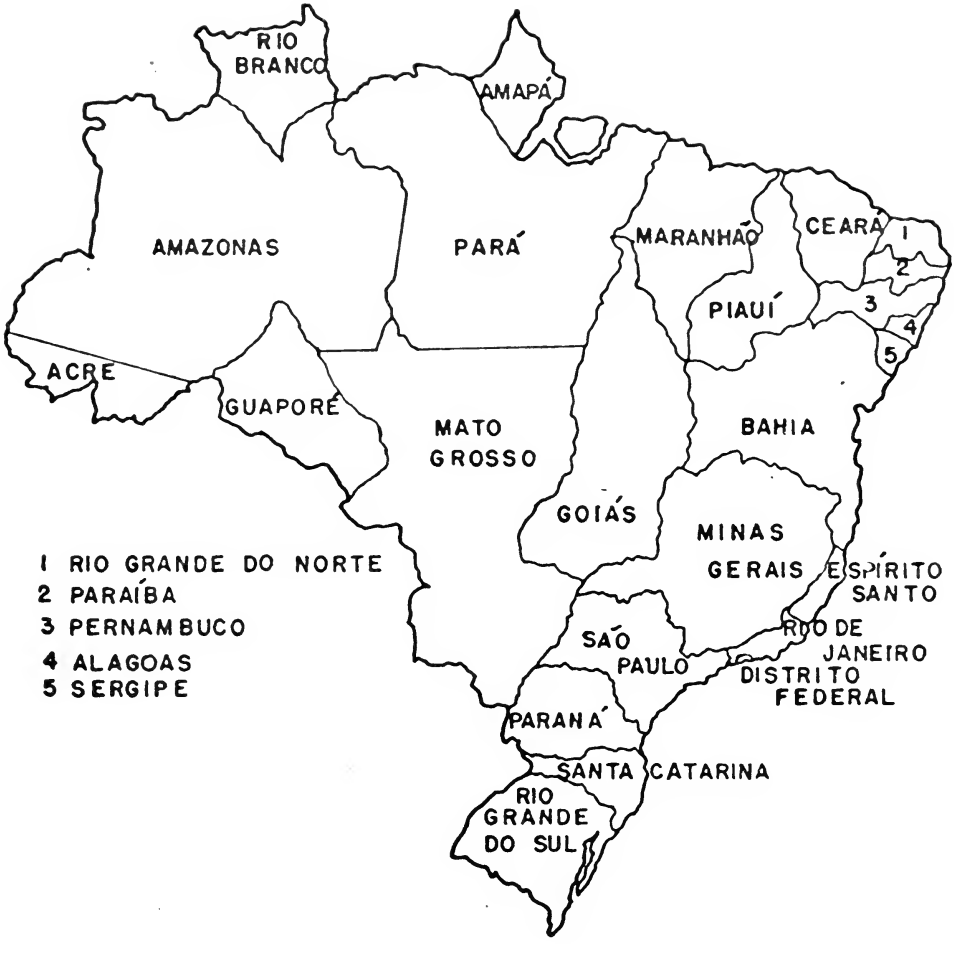

MAP OF BRAZIL - 1950

PREFACE

The materials contained in the following pages are the result of a long-standing interest in Brazil. This interest was acquired as the result of many years of residence in that country, and has been stimulated by a concentration in Latin American and Brazilian studies in my undergraduate and graduate academic career.

I should like to express my gratitude especially, to Dr. T. Lynn Smith, the Mestre to his Brazilian students, who provided me with the stimulus to pursue my graduate studies beyond the M.A. level, and who through friendly guidance and wise counsel, contributed greatly not only to what merits this study may have, but also to the essential preparation necessary for its undertaking.

I also owe a debt of gratitude to Dr. Winston W. Ehrmann, and to Dr. John M. Maclachlan, who at all times have shown a friendly interest in my work and progress, and from whom I have had much to learn. To Dr. Raymond E. Crist, Dr. A. Curtis Wilgus, and Dr. Donald E. Worcester, I am grateful for the interest they have shown in me and for their encouragement.

To my wife, Julia Vissotto Saunders, I wish to express my appreciation of the many hours she spent aiding in the various painstaking and laborious tasks involved in the preparation of a manuscript of this kind, and who always had a word of encouragement and good cheer.

Thanks are due as well to Mr. Joe Sardo, who made helpful suggestions for the preparation of maps, and to Mrs. Agnes Philpot, who undertook the task of preparing this manuscript in final typewritten form.

An expression of appreciation is due to the University of Florida, that through its Graduate School provided me with a fellowship that enabled me to devote full-time attention to the task of preparing this dissertation; and to the Brazilian Institute of Geography and Statistics (I. B. G. E.), that has been generous in providing me with many of the essential materials necessary for this study. To my many friends on two continents who have lent their moral support to this task, I am also thankful.

In conclusion, I would like to express the hope that I have been half as successful in this undertaking as John Graunt, who in dedicating his Natural and Political Observations Made Upon the Bills of Mortality to the Right Honourable John Lord Roberts, Baron of Truro, Lord Privie Seal, and "one of His Majestie's most Honourable Privie Council," said:

> Now having (I know not by what accident) engaged my thoughts upon the Bills of Mortality, and so far succeeded therein as to have reduced several great confused Volumes into a few perspicuous Tables, and abridged such Observations as naturally flowed from them, into a few succinct Paragraphs, without any long series of multiloquious Deductions, I have presumed to sacrifice these my small, but first publish'd Labours unto your Lordship...

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CHAPTER I

INTRODUCTION

The study of the different rates at which various segments of a population reproduce, is one of the most significant aspects of demographic analysis. It greatly aids in the understanding of the make-up of a people, and in the prediction of the "demographic" future. Differentials in fertility appear to have existed for many centuries. Only in relatively recent times, however, has it become possible to study those differentials effectively, through the use of quantitative mass data.

Brazil occupies approximately one-half of the land mass of the South American continent. It contains about one half of its population. One third of the territory, and one third of the population of the entire Latin American area belongs to Brazil. Latin America is rapidly gaining in numbers and in world importance. Brazil has been setting the pace. Therefore, analysis of its population, which represents approximately one third of the total population of the Latin American nations, is exceedingly important. To know and to understand the differentials in the growth of the various segments of Brazil's population,is to throw light on many of the social processes now in operation in that nation, and is to get a glimpse of the composition and characteristics of future generations. This study attempts to analyze, and in so far as possible, to explain, the principal differentials in the rate of reproduction of the Brazilian people.

The quantitative mass population data, contained in the 1940 and

1950 censuses of the Brazilian population constitute the major sources of the material used for this study. Valuable supplementary material employed is duly acknowledged in the text and in footnotes. Of special value in many phases of this study has been the material contained in the revised edition of Brazil: People and Institutions, by T. Lynn Smith.

The measure of fertility most heavily relied on in the analyses herein contained is the fertility ratio. Ideally, it is calculated by relating the number of children under 5 to women in the childbearing ages (15 to 44),[1] and multiplying by a constant (100) to eliminate awkward decimals, thus:

$$\frac{\text{number of children 0-4}}{\text{number of women 15-44}} \times 100$$

This measure of human reproduction offers a number of advantages over the crude birth rate, or the number of live births during a one-year period per 1,000 inhabitants. It does not depend on birth registration and it standardizes to a great extent for variations in sex and age composition. On the other hand, the calculation of the fertility ratio for certain groups in the population, such as educational and occupational groups, in which mother and child are likely to be in

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[1]It is necessary in dealing with all Brazilian census data to use either women 15 to 49 or 20 to 49 in computing the fertility ratio. The number of children under 5 cannot always be obtained. Wherever possible, children under 5 and women 15-49 have been used in calculating this ratio. Otherwise, children under 10 and women 20 to 49 are the basis of its calculation.

different categories, is not feasible.[2]

The crude birth rate is not used in the analysis of differential fertility in Brazil, because of its extreme unreliability, caused by widespread under-registration of vital statistics. The writer could not express the situation with regard to the under-registration of births in Brazil, better than the anonymous author of the following passage:

> Another difficulty /in determining the rate of reproduction of the racial groups in Brazil/--and more lamentable because it results from the inertia of man and not from the nature of things--is caused by the failures of our registration of births and deaths, that are not paralleled in any other great nation of western civilization. Such is the seriousness of these failures, that vital registration statistics do not allow us to know, even with wide approximation, the total number of births and deaths. These can only be estimated by conjectures, with an ample margin of error. Under these conditions, it would be an absurd pretention to obtain birth rates or death rates for the different ethnic groups.[3]

The extent to which the registration of births fails in Brazil, is graphically portrayed by Fig. 1, which presents minimum estimates of under-registration of births in Brazil by states for the 1939 to 1941 period. In only one state of the federation is the percentage of omissions of birth registration estimated at less than 49. There is no reason to believe that the situation has improved since 1939-1941, or that the registration of deaths is very much more complete.

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[2]For a full discussion of the merits and demerits of the fertility ratio, see T. Lynn Smith, Population Analysis, (New York: McGraw-Hill Book Company, 1948), pp. 193-195.

[3]I. B. G. E., Estudos de Estatística Teórica e Aplicada, Estatística Demográfica No. 14, Estudos Sobre a Natalidade e a Mortalidade no Brasil, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1952), p. 36.

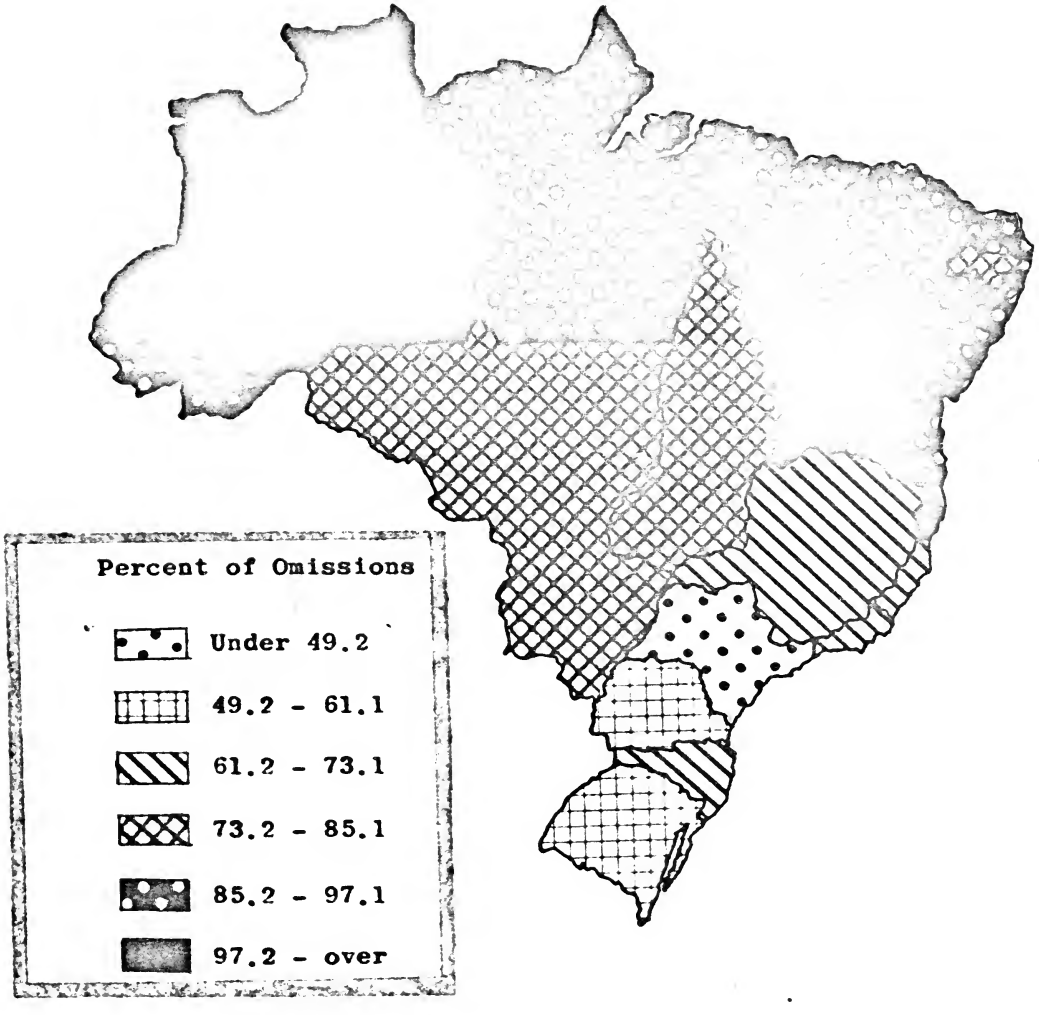

Fig. 1. Minimum Estimated Under-Registration of Births, by States, Brazil, 1939-1941. Prepared from data in I. B. G. E., Estudos de Estatística Teórica e Aplicada, Estatística Demográfica No. 4 Estimativas da Taxa de Natalidade para o Brasil, as Unidades da Federacao e as Principais Capitais, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 194), p. 22.

A few comments that will illustrate some of the difficulties encountered in dealing with the Brazilian census data are in order. Five-year age groups were given for the first time in the 1950 census. These are provided only for ages 0 to 20. In order to obtain the number of children under 5 for the states and territories in 1940, it is necessary to add the children 0 to 9, male and female, who are literate, illiterate, and "undeclared". Since children 0 to 4 are excluded from this tabulation, this sum yields the number of children 5 to 9, which may then be subtracted from the sum of males and females 0 to 9 in order to obtain the number of children 0 to 4. The absence of cross-tabulations of racial and residential groups by age and sex makes it impossible to calculate fertility ratios for such groups as "urban white" and "rural Negro." Less satisfactory substitute devices must be employed.

The attempt to obtain a base map for a given state for a census year is likely to be highly frustrating. Base maps for the states are dated in late 1945. President Getulio Vargas placed a ban on the creation of new counties or municipios during his first term in office (1930-1945). Consequently, just as soon as he went out of power, the nation erupted in a veritable rash of new municipios. In Sao Paulo alone 99 new ones were created. Thus the 1945 base maps of the states do not correspond to the division of the states either in 1940 or 1950. This makes it necessary as was the case for Fig. 4, to compare the municipios in the census with those on the base map, and to make tedious adjustments in order to match the one with the other.

In citing sources, in those instances where the tables have been compiled and computed by the writer, this fact is indicated by the phrase "compiled and computed from data in." Sources for figures that have been prepared by the writer from data presented in census or other volumes, are prefaced by the phrase "prepared from data in." The sources for material that has been taken directly from a volume, omit these prefatory statements.

The territory of Fernando de Noronha, consisting of a group of small islands off the northeastern coast of Brazil, and which contained but 581 persons in 1950, is obviously of no demographic significance, and is omitted from the analyses. The word municipio, the approximate equivalent of the United States county, is not italicized in the pages that follow, because of its frequent occurrence.

For the convenience of the reader who is not overly familiar with the geographical distribution of the political subdivisions of Brazil's territory, an outline map of Brazil has been placed following the title page.

CHAPTER II

REVIEW OF THE LITERATURE

In the following pages the writer attempts a brief review of some of the principal findings related to differentials in the rate of reproduction in various parts of the world. The findings of some pioneering studies are presented first, followed by those that are pertinent to Europe, Asia, the United States, Latin America and Brazil. What would be the monumental task of presenting in detail the findings of every study having to do with differential fertility is not attempted. Rather, the writer hopes that the materials in the following pages will serve as an introduction to the topic of this dissertation, and will help bring the reader so to speak, up to the "line of scrimmage."

Pioneering Studies

One of the very earliest of scholars to present materials relating to differential fertility was Giovanni Botero (1540-1617). His work entitled Della region di stato, libri dieci. Con tre libri delle causa della grandezza e magnificenza della cita, contains a number of astute generalizations. Botero believed that fertility is higher in rural than in urban areas, and that urban growth is principally due to rural-urban migration.[1]

To John Graunt (1620-1674), however, goes a major part of the

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[1]Pitrim A. Sorokin, Carle C. Zimmerman, and Charles J. Galpin, A Systematic Sourcebook of Rural Sociology, (Minneapolis: The University of Minnesota Press, 1930), Vol. 1, pp. 76-79

credit for laying the foundations of modern demographic theory and methods. In his Natural and Political Observations Made Upon the Bills of Mortality, he demonstrated the regularity of the occurrence of births and deaths. In so doing he laid the foundations of modern demography, and brought quantitative materials to bear upon the matter of differential fertility as well as of differential mortality.

The conclusions that he reached regarding differential fertility are basically sound and are worthy of rather extensive quotation.

> We come to shew, why although in the Country the Christnings exceed the Burials, yet in London they do not. The general Reason of this must be, that in London the proportion of those subject to die unto those capable of breeding is greater then in the Countrey (sic); That is, let there be an hundred Persons in London, and as many in the Country; we say, that if there be 60 of them Breeders in London, there are more than 60 in the Country, or else we must say, that London is more unhealthful, or that it enclines men and women more to Barrenness, then the Country, which by comparing the Burials and Christnings of Hackney, Newington, and the other Country-Parishes, with the most Smoaky and Stinking parts of the City, is scarce discernable in any considerable degree.[2]

William Petty (1623-1695) in Several Essays in Political Arithmetic, arrived at much the same conclusions as Graunt concerning rural-urban differentials in fertility. In addition, he presented materials for Dublin and additional materials for London.[3]

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[2]John Graunt, Natural and Political Observations Made Upon the Bills of Mortality, Walter F. Willcox, Ed., (Baltimore: The Johns Hopkins Press, 1939), pp. 54-55.

[3]Sorokin, Zimmerman and Galpin, op. cit., pp. 99-100.

Gregory King (1648-1712) in his Natural Observations and Conclusions Upon the State and Conditions of England, published in 1696, corroborated the findings of Graunt and Petty. He further demonstrated that although a greater proportion is married in London than in rural areas, the fertility per marriage in London was lower.[4] Arthur Young in his The Farmer's Letters to the People of England (1768), presented statistical data to show that urban fertility is higher than rural.[5]

Johann Peter Sussmilch (1707-1767), in Die gottliche Ordnung in den Veranderungen des menschlichen Geschlechts, etc., reached much the same conclusions as his predecessors, but argued that the number of births is about the same in urban and rural families. The rural-urban differential in fertility, he attributed to higher marriage rates in rural areas.[6]

Europe

Inasmuch as the first studies to be made of differential fertility took place in Europe, contemporary findings of demographic studies related to differential fertility in that continent, are examined next.

A. M. Carr-Saunders, used materials furnished by the Registrar-General for England and Wales, giving births for 1911 classified according to the occupations of the father, for the study of socio-economic differentials in fertility. He came to the following

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[4] Ibid., p. 101

[5] Ibid., p. 107.

[6] Ibid., pp. 109-11.

conclusion.

> All available evidence goes to support this conclusion, namely, that the higher the social status, the lower is the fertility, and that the initial difference is not removed by subsequent differential mortality. This is apparently true not only for England but also for other countries in which the economic situation is similar and is a relatively recent phenomena.[7]

The same author also stated that in so far as is known, the upper classes during the Middle Ages were the more fertile, whereas in the later days of Greece and Rome, the position seemed to be reversed.[8]

Additional support was given to the conclusion reached by Carr-Saunders by Reuter, who presented data for Paris, Berlin, Vienna and London, giving birth rates per 1,000 women in the reproductive ages according to the quality of housing. Persons living in "Very Poor Quarters" were found to be more fertile than those living in "Poor Quarters," and these in turn more prolific than those housed in "Comfortable Quarters," and so on through to "Very Rich Quarters." The inhabitants of the latter type of housing were found to be the least fertile. The consistent decline in fertility from the lowest to the highest type of housing is evidenced in all four cities for which data was given.[9]

Further confirmation of the above stated views came from Wright,

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[7]The Population Problem, A Study in Human Evolution, (Oxford: Clarendon Press, 1922), p. 317.

[8]Ibid., p. 457

[9]Edward Byron Reuter, Population Problems, (Philadelphia: J. B. Lippincott Company, 1923), p. 241.

with some qualifications however, that author stated that although fertility is generally inversely associated with social class and income, people in certain industries do not conform to this gradation. "Textile workers for example, have as few children as the middle classes /in England/; while miners have the largest number of all--more than unskilled laborers." The different rate of reproduction among the social classes was attributed at least in part by that author, to postponement of marriage among the upper and middle classes, because of the social pressures requiring greater earnings of the person with middle or upper class status.

> An unskilled or partly skilled workman earns as much at twenty-one as he is likely to earn when he is forty... but a lawyer is seldom in receipt of sufficient income from his profession to maintain a wife and family until he approaches thirty.[10]

Other findings pertaining to differentials in the rate of reproduction in the United Kingdom, are in the Registrar-General's study (1911) and were reported by Lorimer and Osborn. That study presented data on the fertility of marriage in relation to occupation, making use of five broad social classes, with three intermediate ones, a total of eight. These data reveal that

> ...even in marriages formed shortly after the mid-point of the Nineteenth Century marital fertility was somewhat lower for Class I (professional, business and clerical workers) and for Class VI (textile workers) than for other professional groups. But in the more recent marriages, these two classes show deviations from the general average of all marriages that

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[10]Harold Wright, Population, (New York: Harcourt, Brace and Company, 1923), p. 114.

are twice as large as the deviations observed in the earliest marriages included in this series.[11]

Lorimer and Osborn also supplemented with more recent data, materials first presented by Heron, who correlated the number of legitimate births per 100 married women with indices of social status for 1851 and 1901. The results indicated that "at least in the city of London there was a well defined negative correlation between economic status and fertility as early as 1851."[12]

Innes made use of new data contained in the Registrar-General's Decennial Supplement for 1931 to analyze birth rate differentials by occupation for 1921 and 1931 in England, and to compare results with those obtained from the 1911 report. After adjusting the birth rates to eliminate age differences, he found that whereas in 1921 an inverse status-fertility association existed for the two highest classes (I and II), in 1931 the opposite was true.[13]

Contrary to most findings, Edin and Hutchinson discovered in Stockholm a reversal of the usual inverse association between social class and the rate of reproduction. The higher the socio-economic status, the larger the family. These investigators obtained the number of live births occurring in each family during the first ten years of marriage. They

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[11]Frank Lorimer, and Frederick Osborn, Dynamics of Population, (New York: The Macmillan Company, 1934), p. 79.

[12]Ibid., loc. cit.

[13]J. W. Innes, "Class Birth Rates in England and Wales, 1921-1931," The Milbank Memorial Fund Quarterly, Vol. XIX, No. 1, (January, 1941), passim.

classified the families according to income, educational status, and age of wife at marriage. The number of live births was found to increase as educational status increased, and as income increased.[14]

Myrdal, however, reported that this situation is not typical of Sweden as a whole:

> --except for Stockholm and some other cities with a very low level of average reproduction--in general a strong negative correlation /exists/ between income and social status, on the one hand, and number of children on the other. Thus, the majority of families with a great number of children are concentrated in the lower income brackets.[15]

He also offered an explanation of the lower fertility of the lower socio-economic classes in Stockholm:

> Two things must be borne in mind...: first, the fact that it is a question of differential cost--a child or another child presses down the level of living which otherwise would be possible in all income strata; and second, and most important, that rational birth control is still spreading in society. The practice is sinking down through the social structure, i.e., starting in the higher strata and slowly making its way down to the lower strata. The final outcome--a positive correlation between fertility and economic status--is already visible in some Swedish cities, particularly Stockholm.[16]

This explanation implies that when complete control over births is achieved by all the social strata, the number of children will be

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[14]Karl A. Edin and Edward P. Hutchinson, Studies of Differential Fertility in Sweden, (London: P. S. King and Son, Ltd., 1935), pp. 61-75. Cited in Warren S. Thompson, Population Problems, (New York: McGraw-Hill Book Company, Inc., 1953), pp. 191-94.

[15]Gunnar Myrdal, Population, A Problem for Democracy, (Cambridge: Harvard University Press, 1940), p. 47.

[16]Ibid., p. 197.

directly related to the parent's ability to provide for them.

Alva Myrdal holds to much the same view. Family planning according to that author, first developed in upper-class groups. "It is not the difference in fertility between different social groups that needs to be explained, but the different time order and velocity in the acceptance of birth control by these groups." Eventually, "as the broad masses come into the swirl of changing conditions," they too will become sophisticated and class differences in fertility will disappear.[17]

That Sweden like other nations of the world possesses lower urban than rural birth rates was demonstrated by Thomas. However, it is interesting to note that the differential was reversed in the past:

> The crude urban birth rate shows the following relationship to the crude rural birth rate: lower from the 1820's through the 1850's, higher from the 'sixties through the 'eighties, approximately equal during the last decade of the 19th and the first of the 20th century, and lower again in the following decades. During the decade of the 1920's the differential became far more marked than at any previous decade, the ratio of urban to rural rates being only 73.[18]

In France, a study which used 1906 census materials revealed an inverse association between socio-economic status and fertility. This was found to be true whether occupation or income were taken as a measure

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[17]Alva Myrdal, Nation and Family, the Swedish Experiment in Democratic Family and Population Policy, (New York: Harper and Brothers, 1941), p. 62.

[18]Dorothy Swaine Thomas, Social and Economic Aspects of Swedish Population Movements, 1750-1933, (New York: The Macmillan Company, 1941), p. 23.

of socio-economic status.[19] More recently, Landry came to the same conclusion in a study of 20 arrondissements of Paris, classified according to the level of living of the inhabitants of each one. Landry also reports a sizable rural-urban differential in fertility in France, with the urban population reproducing at a slower rate than the rural. The foreign-born were found to have slightly higher birth rates than the native-born.[20] A map presented by Huber, Bunle and Boverat, indicates that fertility is highest in France's most rural provinces and lowest in her urban areas.[21]

D. V. Glass in discussing data relating to differential fertility in Germany (Wurttemberg) for the years 1934 and 1935, pointed out that workers had higher birth rates than officials and the general salaried class. Furthermore, he indicated that a considerable increase in fertility occurred from 1934 to the first quarter of 1935, and stated:

> In so far as it is possible to compare the whole of 1934 with the first quarter of the next year, the rate of increase is greatest among the salaried class and not among the workers ...Looking more closely at the general increase in births, we find that the decrease in abortion has probably been a very important factor.[22]

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[19]Hannibal Gerald Duncan, Race and Population Problems, (New York: Longmans Green and Company, 1929), p. 313.

[20]Adolphe Landry, Traite de Demographie, (Paris: Payot, 1949), pp. 304-308.

[21]Michel Huber, Henri Bunle, and Fernand Boverat, La Population de la France, Son Evolution et Son Perspectives, (Paris: Librairie Hachette, ca. 1939), p. 134.

[22]D.V. Glass, The Struggle for Population, (Oxford: Clarenden Press, 1936), pp. 28-29.

Thompson in discussing data relating to differential fertility in Germany, reported higher fertility among Catholic than among Protestant women, and the usual inverse relationship between socio-economic status and fertility. He also reported that families that owned land had a larger number of children than those that did not. Lest this be thought to be a reflection of the rural-urban differential in fertility, he stated:

> Thus even in the professions only 9.7 percent of the women were childless if the couple owned land, while 15.2 percent were childless if the couple did not own land. Moreover, 53.5 percent of the owning couples had three or more children, while only 39.7 percent of the nonowning couples had three or more children. The differences were proportionately much the same for other occupational groups.[23]

Asia

Relatively little attention has been paid to the analysis of the population of the Asiatic nations. This is in no small measure due to the scarcity of the necessary materials. Less attention still has been given to differentials in the rate of reproduction of various segments of the population of Asiatic countries. A few studies may, however, be cited.

One of the most important of these is that of Kingsley Davis, who in his analysis of the Population of India and Pakistan, devotes considerable attention to the matter of differential fertility.[24]

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[23]Thompson, op. cit., p. 139

[24]Kingsley Davis, The Population of India and Pakistan, Princeton, New Jersey: Princeton University Press, 1951), pp. 70-92.

Davis finds that the familiar residential differential in fertility holds good in India, between urban and rural areas, and between larger and smaller cities. The more rural areas and the smaller cities have higher fertility than the more urban areas and the larger cities. He also found that fertility decreases as class status (measured by caste affiliation), increases. Fertility was found to be greater among agriculturalists than among trading and professional peoples. Within the agricultural category, owners and tenants were found to have low fertility, and farm laborers to have high fertility. Literacy was also found to be inversely correlated with fertility. Muslims were found to be more prolific than Hindus. Davis's main conclusions were as follows:

> (1) A consideration of rural-urban differentials... indicates that the cities have not yet, as in some other countries, inaugurated a general decline in the birth rate.
>
> (2) An analysis of caste fertility on the basis of racial status, occupation, and literacy shows that in the Indian region, as in most other areas, fertility is inversely correlated with social position. But the explanation does not apparently lie primarily in the use of contraceptives by the higher castes, as a Westerner might expect, but rather in the fact that non-marriage, especially in the form of widow celibacy, is much higher in the upper classes...
>
> (3) The religious differentials also demonstrate the role of non-marriage in controlling the Indian birth rate. The superiority of Muslim and Tribal fertility over the Hindu is due in part to their greater toleration of widow remarriage.[25]

A study of education in relation to size of family made in China by Griffing revealed on the other hand, a positive correlation between educational status and fertility.

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[25] Ibid., pp. 81-82.

> The evidence...accumulated indicates that for the region studied, education of parents results in increase rather than decrease in the number of living children. The groups from the highest cultural levels tend to leave the most survivors and reproduce substantially more than their own number.[26]

These findings were corroborated by Lamson, who also found that in China fertility increases as socio-economic status increases.[27] Data collected by the University of Nanking revealed a slight positive association between fertility and the crop area of farms.[28]

A study of the Japanese population by Taeuber and Beal revealed that in that nation rural-urban differentials in fertility are very sharply defined. "Gross reproduction rates for prefectures in 1930-1931 portray in accentuated form the urban-rural and agricultural-industrial patterns of regional differentials..."[29]

The familiar rural-urban differential in the rate of reproduction is also evidenced in the Near East. Jurkat reports that "...we find that low birth rates--and in the Near East we consider as low those rates

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[26]J. B. Griffing, "Education and Size of Family in China," The Journal of Heredity, Vol. XVII, No. 9, (September, 1926), p. 337.

[27]Herbert D. Lamson, "Differential Reproduction in China," The Quarterly Review of Biology, Vol. X, No. 3, (September, 1935), pp. 303-21. Cited in Frank W. Notestein, "Class Differences in Fertility," The Annals of the American Academy of Political and Social Science, Vol. CLXXXVIII, (November, 1936), p. 26.

[28]Notestein, op cit., loc., cit.

[29]Irene B. Taeuber, and Edwin G. Beal, "The Dynamics of Population in Japan," in Demographic Studies of Selected Areas of Rapid Growth, Proceedings of the Round Table on Population Problems, (New York: Milbank Memorial Fund, 1944), p. 20.

below 50-- ...mainly in the urban type of high-density areas."[30] Kiser, writing about Egypt, reported on the other hand that "There appears to be no substantial rural-urban differential in fertility and mortality except in so far as the largest cities /Cairo and Alexandria/are concerned."[31] Kiser also stated that in Egypt religious differentials in fertility are great, fertility being highest for Moslems and lowest for Jews, with Christians occupying an intermediate position. He gave the concentration of non-Moslem elements in Cairo and Alexandria as a possible cause of low fertility in those areas.[32]

United States

Population studies have been greatly developed in the United States. This development has been aided by the availability of decennial census reports, of which there is a total of 17.

One of the earliest studies to devote attention to differentials in the rate of reproduction in the United States was made by Tucker, who, it may be said in passing, made use in some of his analyses of the index that has since come to be known as the fertility ratio.

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[30]Ernest Jurkat, "Prospects for Population Growth in the Near East," in Demographic Studies of Selected Areas of Rapid Growth, Proceedings of the Round Table on Population Problems, (New York: Milbank Memorial Fund, 1944), p. 87.

[31]Clyde V. Kiser, "The Demographic Position of Egypt," in Demographic Studies of Selected Areas of Rapid Growth, Proceedings of the Round Table on Population Problems, (New York: Milbank Memorial Fund, 1944), p. 111.

[32]Ibid., pp. 111-13.

Tucker showed in 1847, that whites reproduced more slowly than slaves, and stated in addition that "The census...offers persuasive evidence that the natural increase of the free portion of the colored population is less than that of the slaves."[33]

Raymond Pearl who used a largely biological approach to differentials in fertility, noted that foreign-born women in America are much more fertile than native born women, but that their descendants soon "slough off this attribute of barbarity, as it is regarded by some."[34] Thompson tentatively arrived at the same conclusions using 1920 census data, and explained the major factor responsible for the differential by saying that

> The foreign-born have a relatively unrestricted birth rate not because they are foreigners nor because they are of certain nationalities, but because they are less urbanized, even though living in cities, than most of our native population. The foreign-born, both men and women, are dominated to a great extent by the attitudes toward life brought with them from their rural communities in the "old country."[35]

In further analysis Thompson demonstrated that fertility is inversely associated with size of urban center, and that the fertility of foreign-born women as well as of native white women is affected by this factor.[36]

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[33]George Tucker, Progress of the United States in Population and Wealth in Fifty Years as Exhibited by the Decennial Census, (New York: Press of Hunt's Merchants' Magazine, 1843), pp. 96-97.

[34]Studies in Human Biology, (Baltimore: Williams and Wilkins Company, 1924), pp. 206-10, 253-72.

[35]Warren S. Thompson, Ratio of Children to Women, 1920, Census Monograph XI, (Washington: United States Government Printing Office, 1931), p. 37.

[36]Ibid., pp. 36-45, 96-107, 114-26.

He also presented fertility ratios for agricultural states, semi-industrial states, and industrial states, for census years from 1800 to 1920. These data clearly show that as early as 1800 a differential existed at least in the net reproduction rate if these groups of states, with the agricultural states reproducing at the fastest pace, and the industrial states at the slowest rate. The differential is found in all the census years for which data was given.[37]

Brunner and Kolb made an interesting analysis of rural-urban differentials in fertility, from the standpoint of distance from an urban center.

> The data for Des Moines show that this /fertility/ratio is lowest in the City County and that it increases with each succeeding tier out from the City County. There appears to be a relationship between the birth rate and the distance from the city of any measured unit of population such as the people of a group of counties.
>
> Furthermore...this relationship existed in the past. It was true in both 1910 and 1920.[38]

Lorimer and Osborn analyzed the fertility of immigrant stocks, and noted that French Canadians are the most prolific, being " a group of rural and orthodox Catholic origin, which suffered little cultural change at first in drifting across the Canadian border into New England towns.[39] Another Catholic and rural immigrant stock, the Irish, also were found to have high fertility, whereas the English and Scotch were among the least prolific of the immigrant stocks.

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[37] Ibid., p. 15.

[38] Edmund de S. Brunner and J. H. Kolb, Rural Social Trends, (New York: McGraw-Hill Book Company, 1933), p. 115.

[39] Op. cit., p. 50.

These authors also presented data from the 1910 Milbank Sample of United States Census Data, that showed that fertility decreases in urban areas as one goes from the unskilled manual worker occupational category to the professional occupational category; and in rural areas, from the farm laborer to the farm owner category.[40] In a further discussion of social class differentials, Lorimer and Osborn stated:

> Social class differentials were found to be surprisingly similar in different types of communities, in an analysis of variations in fertility of marriage in 1900 among social classes in one metropolitan area (Chicago), in a group of cities ranging from approximately 50,000 population, in a group of villages with fewer than 5,000 inhabitants, and in rural farm communities...[41]

An inverse association between education and fertility and between occupational status and fertility, was found by Notestein. The latter comparison held good even when the comparison was made between similar educational groups. With regard to religious differentials, Catholics were found to be more fertile than Protestants, and the differential was discovered to be more accentuated in the upper than in the lower classes. Both religious groups exhibited the characteristic inverse association between status and fertility.[42]

Whelpton found the usual differentials in fertility associated with nativity, occupation and religion, and in addition, further

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[40] Ibid., p. 67

[41] Ibid., pp. 33-34.

[42] Frank W. Notestein, "Class Differences in Fertility," The Annals of the American Academy of Political and Social Science, Vol. CLXXVIII, (November, 1936), pp. 26-36.

analyzed differences in fertility as distance from a city increases. The results show that generally, fertility increases as distance from a city increases.[43]

An intensive study of socio-economic differentials in fertility was made by Kiser. This study reinforced previous conclusions regarding socio-economic differentials.[44] Notestein in his study of fertility in the East North Central states, found the usual inverse association between fertility and size of community, and between socio-economic status (as measured by the value of the home), and fertility. He pointed, however, to some interesting exceptions:

> In one case, that of the native white families in large cities, the average number of children was smaller in families with homes valued at less than $1,000 than in those whose homes were worth from $1,000 to $2,000...
>
> At the other end of the scale the average numbers of children were frequently larger in families with homes valued at $10,000 or more than in those of the $5,000 to $10,000 class... The fact of a direct association between fertility and economic status in some of the upper economic groups is becoming clear.[45]

Notestein is inclined to accept provisionally as an explanation of the phenomena that he noted, the beginning of a reversal of the more

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[43]P. K. Whelpton, "Geographic and Economic Differentials in Fertility," The Annals of the American Academy of Political and Social Science, Vol. CLXXXVIII, (November, 1936), pp. 37-55.

[44]Clyde V. Kiser, "Variations in Birth Rates According to Occupational Status, Family Income, and Educational Attainment," The Milbank Memorial Fund Quarterly, Vol. XVI, No. 1, (January, 1938), pp. 39-56.

[45]Frank W. Notestein, "Differential Fertility in the East North Central States," The Milbank Memorial Fund Quarterly, Vol. XVI, No. 2, (April 1938), p. 188

usual inverse association between fertility and socio-economic status such as has been observed in Stockholm and a few other European cities.

Wilcox, analyzing data for 1930, discovered contrary to previous findings, that native white wives were more fertile than the foreign-born. However, by 1930, a large proportion of foreign-born wives were in the advanced age groups. Standardizing the data for age, the figures were reconciled with previous findings, and the foreign-born were shown to be more fertile than the native-born.[46] Willcox also noted that from 1890 to 1930, the fertility of foreign-born wives decreased much faster than that of native-born wives.[47]

In a study of data gathered by the National Health Survey in the fall and winter of 1935-1936, Kiser discovered the usual inverse relationship between income and fertility, but concluded that the amount of income was more closely related to fertility than occupational status.[48]

The study of fertility rates in Kentucky made by Oyler, revealed that high school attendance tends to reduce fertility, but more interestingly, large urban centers were found to have a depressing effect

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[46]Walter F. Willcox, Studies in American Demography, (Ithaca, New York: Cornell University Press, 1940), pp. 274-75.

[47]Ibid., p. 281.

[48]Clyde V. Kiser, "Intra-Group Differences in Birth Rates of Married Women," The Milbank Memorial Fund Quarterly, Vol. XIX, No. 2, (April, 1941), pp. 147-170. National Health Survey data are analyzed in greater detail, in book form by Kiser in Group Differences in Urban Fertility, A Study Derived From the National Health Survey, (Baltimore: The Williams and Wilkins Company, 1942).

on the fertility of adjacent areas. The author also made the following suggestive statement:

> There is also an indirect relationship between highway construction and decline in population fertility. The more highway traffic passes through a county, the sooner the birth rate declines.[49]

Beegle and Smith in their study of differential fertility, found significant variations in the fertility of residential groups, with the rural-farm population being the most prolific, the urban the least prolific, while the rural-non-farm category occupied an intermediate position. "This relationship prevails," the authors stated "among both whites and Negroes, in both French and Anglo-Saxon Louisiana, and in each of the five type-of-farming areas."[50] An inverse relationship between the size of an incorporated center and fertility was also found. Beegle and Smith noted as well, racial differentials in fertility, in favor of the Negro, but suggested that the differential is largely due to the greater concentration of Negroes than whites in rural areas. Another differential noted is that between different ethno-religious areas:

> The population of French-Catholic south Louisiana is multiplying far more rapidly than that of Anglo-Saxon,

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[49]Merton D. Oyler, Fertility Rates and Migration of Kentucky Population, 1920 to 1940, as Related to Communication, Income and Education, Reprint of Kentucky Agricultural Experiment Station Bulletin 469, (November, 1944), p. 26.

[50]J. Allan Beegle and T. Lynn Smith, "Differential Fertility in Louisiana," Louisiana State University Agricultural Experiment Station, Louisiana Bulletin No. 403, (June, 1946), p. 24. See also T. Lynn Smith and Homer L. Hitt, The People of Louisiana, (Baton Rouge: Louisiana State University Press, 1952), chap. XI.

> Protestant north Louisiana. This difference prevails among all residential groups of both races. Except for the rural-urban differential it is the most significant difference observed.[51]

Smith, in Population Analysis devoted a full chapter to differential fertility, which contains the following significant statement in relation to regional differences in fertility:

> Other than these reflections of the urbanity of the rurality of the populations, there seems little to be said about regional differences. In fact, the results of the analysis in this and the two preceding sections may be summed up as follows: Every refinement introduced into the analysis of the data concerning the net reproduction rate in the United States tends to emphasize the importance of the rural-urban differential in fertility and to minimize racial and regional differences in the rate of reproduction. When the residential differentials are fully isolated, there is little if anything left to be attributed to other factors.[52]

Latin America

Demographic studies have progressed but slowly in Latin America. As in Asia, this has been in part due to the lack of recent census materials for many of the countries. Most analyses of the population of the nations belonging to this area, have been made by scholars from other parts of the world. It is to be hoped, however, that the increasing availability of adequate and recent census tabulations for the various Latin American nations will result in the appearance of up-to-date studies making use of modern demographic analytical techniques.

One of the more significant studies of Latin American nations is that made by Whetten of Mexico. In his discussion of marriage and

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[51] Ibid., p. 5.

[52] T. Lynn Smith, Population Analysis, (New York: McGraw-Hill Book Company, 1948), p. 218.

family institutions he brought data to bear on the matter of differential fertility. These data indicate that Mexico is no exception to the general rule of lower fertility in urban than in rural areas.[53]

A study by Moore threw additional light on differential fertility in Mexico. The study was based on interviews of 600 factory workers in Puebla, in 1943-49. Although the sample is relatively small, the results of the inquiry are interesting and worthy of mention. Moore found that fertility is significantly higher among couples who had been united by religious rites (and are thereby considered by the author to be "conservative"), than among couples who were united only by a civil ceremony or by no ceremony at all ("liberal"). He also found, and this is of particular interest, that fertility was directly associated with income even when age was taken into consideration. Furthermore, the income differentials were within an occupational class.[54]

Hatt presented some interesting conclusions resulting from a study of fertility in Puerto Rico. He found an inverse association between fertility and socio-economic status, and between fertility and urbanity, and concludes that 1920 represents the approximate date when these "demographic effects usually attributed to industrial development were first felt in Puerto Rico," inasmuch as these differentials did

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[53]Nathan L. Whetton, Rural Mexico, (Chicago: The University of Chicago Press, 1943), pp. 390-93.

[54]Wilbert E. Moore, "Attitudes of Mexican Factory Workers Toward Fertility Control," in Approaches to Problems of High Fertility in Agrarian Societies, Papers Presented at the 1951 Annual Conference of the Milbank Memorial Fund, (New York: Milbank Memorial Fund, 1952), pp. 74-101.

not occur among those married before that date. Another conclusion reached by that author is that fertility is negatively associated with colored (de color) persons. However, he suggests that this may be due to urban residence. He also found no relationship between Catholicism and fertility as might be expected, and stated:

> The second deviation from "common sense" judgments, the fertility differential between consensual unions as opposed to legal marriages, shows the latter to be generally and substantially the more fertile.[55]

In his analysis of data for Argentina, Taylor noted that

> The higher birth rates and the higher infant death rates are in the most rural provinces. One of these facts offers the principal explanation of the other. But in addition to this, in the rural and peripheral provinces are a far higher percentage of the population with Indian heritage, a higher percentage of the economically poor who live in poorer houses, have less medical care, and are undoubtedly more ignorant of proper child care.[56]

Mention of a rural-urban differential in fertility in Uruguay was made by Solari who shows that in 1908 (the date of the last census) fertility was much lower in urban than in rural areas. He concluded that although more detailed study is impossible due to the lack of recent census materials, every indication points to the conclusion that the differential exists today.[57]

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[55]Paul K. Hatt, Backgrounds of Human Fertility in Puerto Rico, (Princeton, New Jersey: Princeton University Press, 1952), p. 333.

[56]Carl C. Taylor, Rural Life in Argentina, (Baton Rouge: Louisiana State University Press, 1945), p. 83

[57]Aldo E. Solari, Sociologia Rural Nacional, (Montevideo: Biblioteca de Publicaciones Oficiales de la Facultad de Derecho y Ciencias Sociales de la Universidad de Montevideo, 1953), p. 121.

Interesting material was presented by Nelson, relating to racial differentials in the rate of reproduction in Cuba. In that country, although fertility ratios for the "colored " group (which includes Negroes, Chinese and mixed-bloods) are higher than the fertility ratios for whites, the Negro and mixed-blood populations have constituted an ever decreasing proportion of the total population. From 1931 to 1943 the decline in the relative importance of Negroes was greater than the same decline for mixed-bloods. The apparent contradiction of these facts is tentatively explained by amalgamation of the races.[58]

Brazil

Studies of differential fertility in Brazil have been handicapped, as in most Latin American Countries by lack of data. The 1940 census, for example, for the first time since 1890 presented data relating to the racial composition of the population. That census (published in 1950), and the appearance of the principal results of the 1950 census have made possible a number of studies of differentials in the fertility of the Brazilian population.

These are to be found in two main sources: a series of publications

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[58]Lowry Nelson, Rural Cuba, (Minneapolis: The University of Minnesota Press, 1950), pp. 27-31.

of the Brazilian Institute of Geography and Statistics,[59] and in the two editions of Brazil: People and Institutions, by T. Lynn Smith. The first of these sources unfortunately relies almost exclusively on 1940 census data which the present writer considers unreliable, and which he discusses and analyzes in Chapter VII. In the second of these sources, the author demonstrated that the usual rural-urban differential in fertility exists in Brazil, and that the Negro segment of the population is reproducing more slowly than either the white or mixed-blood segments, and that the population is undergoing a "whitening" process.[60] These conclusions are supported by the more intensive analysis based on more complete data which is presented in the following pages.

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[59] I. B. G. E., Estudos de Estatística Teórica e Aplicada, Estatística Demográfica: No. 4, Estimativas da Taxa de Natalidade para o Brasil, as Unidades da Federação e as Principais Capitais (1948); No. 6, A Prolificidade da Mulher, Segundo a Idade Inicial da Atividade Reprodutora, no Brasil (1949); No. 8, Características Demográficas do Estado da Bahia (1949); No. 10, Pesquisas Sobre a Natalidade no Brasil (1950); No. 14, Estudos Sobre a Natalidade e a Mortalidade no Brasil (1952); No. 15, Estudos Sobre a Natalidade em Algumas Grandes Cidades do Brasil (1953; No. 16, Pesquisas Sobre a Natalidade no Brasil, 2a. Série (1953); (Rio de Janeiro: Serviço Gráfico do I. B. G. E.).

[60] T. Lynn Smith, Brazil: People and Institutions, Revised Edition (Baton Rouge: Louisiana State University Press, 1954), pp. 191-96, 160.

CHAPTER III

THE LEVEL OF THE RATE OF REPRODUCTION AND THE GROWTH OF THE POPULATION

Before proceeding to the analysis of differentials in the fertility of Brazil's population, it is well to examine some international differentials in the rate of reproduction, and to compare them with the rate of reproduction in Brazil. In this way, one can obtain a better idea of the magnitude of that rate in Latin America's largest nation.

Such a comparison is made possible if we examine the crude birth rates, or the number of live births during a one-year period, per 1,000 inhabitants, in various areas of the world. In Table 1, in addition to the estimated birth rate for Brazil, are presented birth rates for those areas of the world believed by the Statistical Office of the United Nations to have complete or nearly complete birth registration.

This tabulation offers confirmation of the impression that the birth rate in Brazil is at a very high level. Only three of the 53 areas of the world for which reliable birth rates were available in 1950, possessed a higher birth rate than that of Brazil (43.6). These were Mauritius, Mexico, and Singapore. Of particular significance is the fact that some of the world's most rural areas, that can therefore be expected to reproduce at a very rapid rate are included in the tabulation. In addition to Brazil, only six of the 53 areas of the world included in the tabulation had birth rates

TABLE I

CRUDE BIRTH RATES FOR AREAS OF THE WORLD HAVING COMPLETE OR NEARLY COMPLETE BIRTH REGISTRATION, 1950*

Area	Crude birth rate
Brazil(1)	43.6
Africa	
Union of South Africa	
Europeans	25.1
Algeria	
Europeans	20.7
Mauritius	49.7
Mozambique	
Non-indigenous population	33.9
Southern Rhodesia	
Europeans	27.2
South West Africa	
Europeans	32.1
America	
Canada	27.1
Mexico	45.7
United States	23.5
Bahama Islands	32.0
Barbados	30.7
Bermuda	34.7
British Honduras	39.4
Jamaica	33.1
Leeward Islands	35.5
Windward Islands	37.3
Trinidad and Tobago	37.5
Virgin Islands	33.4
British Guiana	40.4
Asia	
Ceylon	40.4
Israel	33.0
Japan	28.2
Cyprus	29.9
Federation of Malaya	42.0
Singapore	45.7

TABLE I continued

CRUDE BIRTH RATES FOR AREAS OF THE WORLD HAVING COMPLETE OR NEARLY COMPLETE BIRTH REGISTRATION, 1950*

Area	Crude birth rate
Europe	
Austria	15.6
Bulgaria (1947)	24.0
Belgium	16.9
Czechoslovakia (1949)	22.1
Denmark	18.6
Finland	24.5
France	20.5
German Federal Republic	16.2
Greece (1949)	26.1
Hungary (1948)	19.1
Iceland	28.7
Ireland	21.3
Italy	19.6
Luxembourg	14.8
Netherlands	22.7
Norway	19.1
Poland	30.5
Portugal	24.4
Spain	20.2
Sweden	16.4
Switzerland	18.1
United Kingdom	16.2
Yugoslavia	30.4
Oceania	
Australia	23.2
New Zealand	24.7
Fiji Islands	39.9
Hawaii	28.6
Pacific Islands (U.S.)	35.9

*Source: United Nations, Demographic Yearbook, 1953,(New York; Statistical Office of the United Nations, 1953), pp. 132-41.
(1) Estimate of the Brazilian Institute of Geography and Statistics.

above 40.0.

If the fertility ratio, or the number of children under 5 per 100 women aged 15 to 44, for the various nations and areas of the world are compared with the one for Brazil, another, and more satisfactory gauge of the level of the rate of reproduction in Brazil is obtained. Such a comparison is made possible by Table 2, which excludes the Latin American nations. Of the 33 areas of the world for which these materials are presented, only the Moslem population of Algeria, the population of the Canadian Yukon and Northwest Territories, and the population of Formosa, are revealed to reproduce more rapidly than the population of Brazil. It is significant that among the areas included, are places such as Portuguese Guinea, India and Japan, where the rate of reproduction is at a very high level. Nevertheless, the rate of reproduction of these areas is far outdistanced by that of Brazil.

Because of the marked under-registration of births in 17 of the 20 Latin American republics, a comparison between the Brazilian birth rate and the birth rates of the other Latin republics in the hemisphere is largely meaningless. However, the fertility ratio, which does not depend on the registration of vital statistics, provides an adequate basis for comparison.

Unfortunately, it is not possible to calculate fertility ratios for a fairly recent date for all of the Latin American Republics. In Table 3 fertility ratios are presented for 18 of the 20 republics belonging to that area, and for Puerto Rico, whenever possible for

TABLE 2

FERTILITY RATIOS FOR MAJOR WORLD AREAS EXCLUSIVE OF LATIN AMERICA, AND FOR BRAZIL*

Area	Fertility ratio(1)	Year	Nature of data
Brazil	70.5	1950	Census
Africa			
Algeria			
Moslems	76.7	1953	Estimate
Non-Moslems	41.3	1953	Estimate
Basutoland			
Africans	45.0	1946	Census
Gold Coast			
Africans	61.5	1952	Estimate
Portuguese Guinea	49.9	1950	Census
Southern Rhodesia			
Europeans	55.7	1951	Census
America			
Canada	55.4	1951	Census
Canada			
Yukon and Northwest Territories	76.4	1951	Census
United States	47.9	1950	Census
Alaska	61.5	1950	Census
Asia			
Formosa	84.6	1952	Estimate
India	61.4	1951	Census
South Korea	57.8	1952	Census
Israel	57.8	1952	Estimate
Japan	58.1	1950	Census
Turkey	66.3	1950	Census

TABLE 2 continued

FERTILITY RATIOS FOR MAJOR WORLD AREAS EXCLUSIVE OF LATIN AMERICA, AND FOR BRAZIL*

Area	Fertility ratio(1)	Year	Nature of data
Europe			
Denmark	45.2	1950	Census
Austria	34.8	1951	Census
Belgium	38.0	1951	Estimate
Finland	54.4	1950	Census
France	46.1	1953	Estimate
German Federal Republic	30.1	1950	Census
Iceland	59.1	1950	Census
Norway	44.7	1950	Census
Portugal	44.9	1950	Census
Sweden	40.0	1950	Census
England and Wales	39.2	1951	Census
Northern Ireland	46.2	1951	Census
Scotland	41.7	1951	Census
Switzerland	39.1	1950	Census
Yugoslavia	49.5	1952	Estimate
New Zealand	55.8	1951	Census
Australia	50.8	1952	Estimate

*Source: Compiled and computed from data in United Nations, Demographic Yearbook, 1953, (New York: Statistical Office of the United Nations, 1953), pp. 114-130.

(1) Fertility ratio determined as follows: $\frac{\text{children 0-4}}{\text{women 15-44}} \times 100$

TABLE 3

FERTILITY RATIOS FOR THE VARIOUS LATIN AMERICAN COUNTRIES*

Country	Fertility ratio(1)	Year
Brazil	70.5	1950
Argentina	46.8	1947
Chile	52.3	1940
Colombia	67.6	1938
Costa Rica	73.9	1950
Cuba	57.4	1943
Dominican Republic	59.8	1950
Ecuador	76.5	1950
El Salvador	67.4	1950
Guatemala	72.2	1950
Haiti	49.7	1950
Honduras	72.7	1950
Mexico	68.4	1950
Nicaragua	70.2	1950
Panama	75.4	1950
Paraguay	75.2	1950
Peru	71.5	1940
Puerto Rico	78.4	1950
Venezuela	76.7	1950

*Sources: Figures for Panama, Dominican Republic, Haiti, Mexico, Venezuela, Peru, Guatemala, Cuba, Argentina, Chile and Colombia, are from the MS of The People of Latin America by T. Lynn Smith. Figures for Brazil, Honduras, Nicaragua, Costa Rica, El Salvador, Puerto Rico and Ecuador, compiled and computed from data in United Nations, Demografic Yearbook, 1953, (New York: Statistical Office of the United Nations, 1953), pp. 116-19. Figure for Paraguay computed from data in Demografic Yearbook, 1954, p. 126.

(1) Fertility ratio determined as follows: $\frac{\text{children under 5}}{\text{women 15-44}} \times 100$

1950.

The rate of reproduction of the Brazilian population as measured by the fertility ratio (70.5), is greater than that of Nicaragua, El Salvador, Cuba, Haiti, Mexico, Argentina, Chile, and Colombia. The population of Honduras, Costa Rica, Panama, Puerto Rico, Ecuador, the Dominican Republic, Guatemala, Peru, Paraguay and Venezuela, are revealed to be reproducing at a more rapid rate than that of Brazil.

The great speed with which the Brazilian people is reproducing itself, is also reflected in the terrific rate at which the population is increasing. Although immigration has contributed somewhat to the growth of the Brazilian population, the overwhelming factor responsible for that growth is the high reproduction rate.

The increase of the population in absolute and relative numbers, from 1900 to 1950, and from 1920 to 1950, is given in Table 4. From 1900 to 1950, the total population of Brazil increased from 17,433,434 to 51,944,397 inhabitants, an absolute increase of 43,505,963, and a relative increase of 193 percent.

Greatest increases are to be found in the states comprising the Southern region, that have benefited the most from immigration. From 1900 to 1950, the population of Rio Grande do Sul increased by 262 percent, and that of Sao Paulo by 300 percent; Santa Catarina's population registered and increase of 337 percent, and the people of Parana increased by no less than 547 percent.

Outside of the Southern region, the greatest increases in population have occurred in the two states comprising the West Central region (Mato Grosso and Goiás), which have been the goal of

TABLE 4

THE GROWTH OF THE BRAZILIAN POPULATION, 1900-1950*

Region and State	Population 1900	1920	1940	1950
Brazil	17,438,434	30,635,605	41,236,315	51,944,397
North				
Acre (1)	---	92,379	79,768	114,755
Amazonas	249,756	363,166	438,008	532,215
Pará	445,356	983,507	944,844	1,160,750
Northeast				
Maranhão	499,306	874,337	1,235,169	1,593,248
Piauí	334,328	609,003	817,601	1,045,696
Ceará	849,127	1,319,228	2,091,032	2,695,450
R. G. do Norte	274,317	537,135	768,018	967,921
Paraíba	490,784	961,106	1,422,282	1,713,259
Pernambuco	1,178,150	2,154,835	2,688,240	3,395,185
Alagoas	649,273	978,748	951,300	1,093,137
East				
Sergipe	356,264	477,064	542,326	644,361
Bahia	2,117,956	3,334,465	3,918,112	4,834,575
Minas Gerais	3,594,471	5,888,174	6,736,416	7,717,792
Espírito Santo	209,783	457,328	750,107	861,562
Rio de Janeiro	926,035	1,559,371	1,847,857	2,297,194
Dist. Federal	811,443(2)	1,157,873	1,764,141	2,377,451
South				
São Paulo	2,282,279	4,592,188	7,180,316	9,134,423
Paraná	327,136	685,711	1,236,276	2,115,547
Santa Catarina	320,289	668,743	1,178,340	1,560,502
R. G. do Sul	1,149,070	2,182,713	3,320,689	4,164,821
West Central				
Goiás	255,284	511,919	826,414	1,214,921
Mato Grosso	118,025	246,612	432,265	553,979

TABLE 4 continued

THE GROWTH OF THE BRAZILIAN POPULATION, 1900-1950*

Region and State	1900-1950 Absolute increase	1900-1950 Percentage increase
Brazil	34,505,963	197.87
North		
Acre (1)	---	---
Amazonas	282,459	113.09
Pará	715,398	160.63
Northeast		
Maranhão	1,093,942	219.09
Piauí	711,368	212.77
Ceará	1,846,323	217.43
R. G. do Norte	693,604	252.84
Paraíba	1,222,475	249.08
Pernambuco	2,217,035	188.17
Alagoas	443,864	68.36
East		
Sergipe	288,097	80.86
Bahia	2,716,619	128.26
Minas Gerais	4,123,321	114.71
Espírito Santo	651,779	310.69
Rio de Janeiro	1,371,159	148.06
Distrito Federal(3)	1,566,018	192.99
South		
São Paulo	6,852,144	300.23
Paraná	1,788,411	546.70
Santa Catarina	1,240,213	387.21
R. G. do Sul	3,015,751	262.45
West Central		
Goiás	959,637	375.90
Mato Grosso	440,954	373.61

TABLE 4 continued

THE GROWTH OF THE BRAZILIAN POPULATION, 1900-1950*

Region and State	1920-1950 Absolute increase	1920-1950 Percentage increase
Brazil	21,308,792	69.55
North		
Acre (1)	22,376	24.22
Amazonas	169,049	46.55
Pará	177,243	18.05
Northeast		
Maranhão	718,911	82.22
Piauí	436,693	71.70
Ceará	1,376,222	104.32
R. G. do Norte	430,786	80.20
Paraíba	752,153	78.30
Pernambuco	1,240,350	57.56
Alagoas	114,389	11.68
East		
Sergipe	167,567	35.12
Bahia	1,500,110	44.98
Minas Gerais	1,829,618	31.07
Espírito Santo	404,244	88.39
Rio de Janeiro	737,823	47.31
Distrito Federal	1,219,578	105.32
South		
São Paulo	4,542,235	98.91
Paraná	1,429,836	208.51
Santa Catarina	891,759	133.34
R. G. do Sul	1,982,108	90.80
West Central		
Goiás	703,002	137.32
Mato Grosso	312,367	126.66

*Source: Compiled and computed from data in I. B. G. E., Conselho Nacional de Estatística, Serviço Nacional de Recenseamento, VI Recenseamento Geral do Brasil, Censo Demográfico (1 de julho de 1950), Estados Unidos do Brasil, Seleção dos Principais Dados, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1951, 1952, 1953), passim.

(1) Territory. For 1950, the population of the territories of Amapá, Guaporé and Rio Branco, are included in the population of Pará, Mato Grosso, and Amazonas, respectively.

(2) 1906. Results of the 1900 census were rejected.

(3) 1906-1950. See (2) above.

considerable internal westward migration. From 1900 to 1950, the population of Goiás increased by 376 percent, and that of Mato Grosso increased by 374 percent.

Greatest numerical gains from 1900 to 1950 were made by São Paulo, Minas Gerais, Bahia, Rio Grande do Sul, and Pernambuco, listed in the decreasing order of the size of the increase.

Slowest to increase during the fifty-year period preceding 1950 were Alagoas (68 percent), Sergipe (81 percent), Amazonas (113 percent), Minas Gerais (115 percent), and Bahia (123 percent). The great speed with which the Brazilian population is increasing is emphasized by the fact that from 1900 to 1950 only two states of the federation failed to double their numbers. During the same period, eight of the nation's 22 political subdivisions increased by more than 250 percent. Six of the subdivisions of the nation's territory (Ceará, the Federal District, Paraná, Santa Catarina, Goiás, and Mato Grosso, more than doubled their numbers from 1920 to 1950.

Lowest rates of increase during the 30-year period preceding 1950 were recorded for the states of Alagoas with a percentage increase of 12, Pará (18 percent), Acre (24 percent), Minas Gerais (31 percent), and Sergipe (35 percent).

On a regional basis, whether the 1900-1950 or the 1920-1950 period be considered, greatest rates of increase are to be found in the Southern and West Central regions, and smallest population growth occurred in the Northern region.

If the population of Brazil continues to grow even at a "low" rate of 2.0 percent per year, it will surpass the 100 million mark

before the end of the century. Since considerable inroads are being made against mortality, and the death rate is known to fall more rapidly than the birth rate, there may well be 100 million Brazilians before the next fifty years have elapsed.

CHAPTER 4

RESIDENTIAL DIFFERENTIALS IN FERTILITY

Perhaps no other differential in the fertility of human populations has been so oft studied, commented upon and analyzed as the residential. Some of the first observations ever recorded on fertility differentials are related to the subject of this chapter.

The different rates at which the urban and rural portions of a population reproduce are without doubt of great importance. In practically every human group of any size, men live to a greater or lesser degree in comparatively small areas with a high population density, which are characterized by an urban mode of life. Conversely, rural areas are also to be found all over the globe.

Such questions, therefore, as the proportions of a given population living in urban and rural areas, the rate of reproduction in them, and the rate at which a population is becoming urbanized, are of paramount importance in attempting to predict the demographic future of a population, along with all that is implied in that expression.

As the result of studies conducted at different points in time and in many parts of the world, one of the most universally accepted of population theories has been the differential fertility of rural and urban areas, with the latter possessing lower fertility than the former. Although the level of fertility is by no means the same for all urban areas even of comparable size, or for all country areas even if possessing a comparable degree of rurality,

the lower urban level of fertility holds generally true when compared with the surrounding rural population.

A number of factors may be postulated to account for the slower pace at which the urban population reproduces. One that is often cited is the economic burden that children place upon urban parents whereas to the rural dwellers children are likely be be an economic asset. This generalization is particularly applicable in highly rural "under-developed" nations like Brazil, where a large portion of agriculture is of the subsistence type and has not advanced beyond the hoe or rudimentary plow system of agriculture. Methods of birth control are at hand for the urban dweller to limit his family to the desired size. Being better educated and more aware of the possibilities of birth control and possessing greater economic resources than his rural brother, the city man is more prone to adopt family limitation practices.

Another factor is the shortage of men in urban areas or a low urban sex ratio, which is reflected in lower proportions of the city population being married. The incentive to marry is smaller in urban than in rural areas. In the city a bachelor may live comfortably and enjoy many of the pleasures of life on a relatively moderate income. The city with its many opportunities for diversion and recreation of the most varied kinds, minimizes and supplants to some extent the need for and function of a home. In addition, the acquisition of a wife and the procreation of children places a much greater financial burden on the city dweller than on the inhabitant

of country districts. Finally, the anonymity of the city makes it possible for both men and women to engage in sexual intercourse outside of the bonds of the family with greater ease.

The Rurality of the Population

When appraising the degree of rurality (or urbanity) of the Brazilian population, the Brazilian census definition of its threefold division of the population into urban, suburban, and rural must be kept in mind.

The states of Brazil are subdivided into municipios which are analogous to the United States county, and these in turn are divided into districts. The census defines as urban the cores of the federal capital, state capitals, seats of municipios and seats of districts. The suburban area includes areas immediately adjacent to the urban core. The federal decree of 1938 which established the criteria for the delineation of urban, suburban and rural zones, specifies that:

> The delineation of the suburban portion of the seats of municipios or distritos, shall consist in the clear and simple description of a line.../ on a county map /embracing an area that surrounds at a variable distance, the urban section, an area into which the expansion of the urban zone is already proceeding or to which due to its favorable topographic conditions this expansion is naturally destined.

The rural population consists of the inhabitants of those areas that are not included in either the urban or suburban categories.

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[1] T. Lynn Smith, Brazil: People and Institutions, Revised Edition, (Baton Rouge; Louisiana State University Press, 1954), p. 164.

In effect, the political function of a locality is the main criterion for its classification as urban or rural.

This criterion is not altogether far-fetched, since with only one minor exception the state capital is the largest urban center in the state, and with probably very few exceptions the seat of the municipio is always the largest urban center in that political subdivision, and likewise for the seats of the districts. This practice, however, does lead to the inclusion in the urban category of many localities that could hardly be considered urban from any other standpoint.[2] As a result, many hundreds of localities possessing fewer than 1,000 inhabitants which would be classified as rural in the United States are in Brazil considered to be urban. If the United States census criteria of a minimum of 2,500 inhabitants for urban places were employed, a still larger share of the Brazilian population now considered urban, would be thrown into the rural category.

It becomes evident therefore, that the degree of rurality in Brazil is actually greater than that indicated by census figures--a fact that must be constantly kept in mind. In 1950, 25.0 percent of the population was classified as urban, 11.2 percent as suburban and 63.8 percent as rural. A more realistic estimate of the rurality of the population can be had by considering the suburban population as rural, thus placing 75 percent of the nation's inhabitants in

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[2]Cf. Ibid., pp. 164-67

the rural category. Not only is Brazil highly rural from the quantitative standpoint, but it is also highly rural from a qualitative point of view. It would be difficult to imagine places where a greater degree of rurality prevails than in the many small hamlets and villages scattered over Brazil's vast territory.

Examination of Table 5 reveals the high degree of rurality that prevails throughout the national territory. If the Federal District (Distrito Federal) a small area almost entirely occupied by the capital city of Rio de Janeiro, and the territory of Rio Branco possessing an insignificantly small population are excluded, in only two states do more than 25 percent of the population live in urban areas.

The three most rural states are to be found in the Northeast region: Piauí with only 8.0 percent of its population in the urban category; Maranhão, with 10.5 percent of its inhabitants so classified; and Ceará which is only 11.8 percent urban. The highest proportions of urban population are to be found in São Paulo in the Southern region (39.9 percent), and in Rio de Janeiro (40.5 percent) and the Federal District (74.3 percent) in the Eastern region.

Nation-Wide Differentials

In making comparisons between the fertility ratio in the various states of Brazil, the role played by infant mortality must be kept in mind. Infant mortality in Brazil is high. It also varies considerably from one part of Brazil to another. The extent of the variation may be glimpsed from Table 12 Estimated infant mortality rates for thirty São Paulo municipios, calculated by the Brazilian

TABLE 5

PERCENTAGES OF THE BRAZILIAN POPULATION CLASSIFIED AS URBAN, SUBURBAN, AND RURAL, BY STATES, 1950*

Region and State	Percent Urban	Percent Suburban	Percent Rural
North			
Guaporé(1)	20.0	17.4	62.6
Acre(1)	13.3	5.2	18.5
Amazonas	15.6	11.2	73.2
Rio Branco(1)	25.7	2.6	71.7
Pará	16.6	18.1	65.4
Amapá(1)	17.8	19.3	62.9
Northeast			
Maranhão	10.5	6.9	82.7
Piauí	8.0	8.3	83.7
Ceará	11.8	13.4	74.8
Rio Grande do Norte	17.7	8.5	73.8
Paraíba	18.3	8.3	73.3
Pernambuco	14.7	19.7	65.6
Alagoas	13.7	12.5	73.8
East			
Sergipe	21.4	10.5	68.2
Bahia	19.6	6.3	74.1
Minas Gerais	18.5	11.5	69.9
Espírito Santo	15.8	6.8	77.4
Rio de Janeiro	40.5	7.0	52.5
Distrito Federal	74.8	22.0	3.1
South			
São Paulo	39.9	12.7	47.4
Paraná	16.6	8.3	75.0
Santa Catarina	17.3	6.0	76.8
Rio Grande do Sul	24.4	9.8	65.9
West Central			
Mato Grosso	32.4	10.7	65.9
Goiás	14.9	5.3	79.8
Brazil	25.0	11.2	63.8

*Source: Compiled and computed from data in I. B. G. E., Conselho Nacional de Estística, Servico Nacional de Recenceamento, VI Recenceamento Geral do Brasil, Censo Demográfico (1 de julho de 1950), Seleção dos Principais Dados, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1951, 1952, 1953), passim.
(1) Territory

Institute of Geography and Statistics (I. B. G. E.), show a variation of from 93.13 to 254.55 deaths of infants under the age of one per thousand live births.[3] Furthermore, wide variations no doubt occur in the mortality of the 1-4 age group. As a result, the relationship of the number of children under 5 in the population to the number of live births is not constant. Nevertheless, the fertility ratio remains a valuable index of what has been termed "effective fertility."

The fertility of persons living in urban, suburban, and rural areas varies considerably in Brazil. In 1950, in rural areas there were 77.8 children 0-4 per 100 women 15-49. In suburban areas this figure was 58.9 and in urban areas only 43.2.

Residential differentials in the rate of reproduction are not the same in magnitude or importance over the entire area of Brazil.

In an attempt to analyze these variations, a three factor map of Brazil showing size of population, proportions urban, rural, and suburban, and the variations in fertility in each of the residential categories was prepared (Fig. 2), thus permitting a simultaneous comparison of size of population, proportions in urban, suburban and rural areas, and the rate of reproduction.

Analysis of this map shows that in all states with the exceptions of Alagoas and Goiás, the urban, suburban and rural differentials in

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[3] I. B. G. E., Estudos de Estatística Teórica e Aplicada, Estistica Demográfica No. 14, Estudos Sobre a Natalidade e a Mortalidade no Brasil, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1952), p. 157.

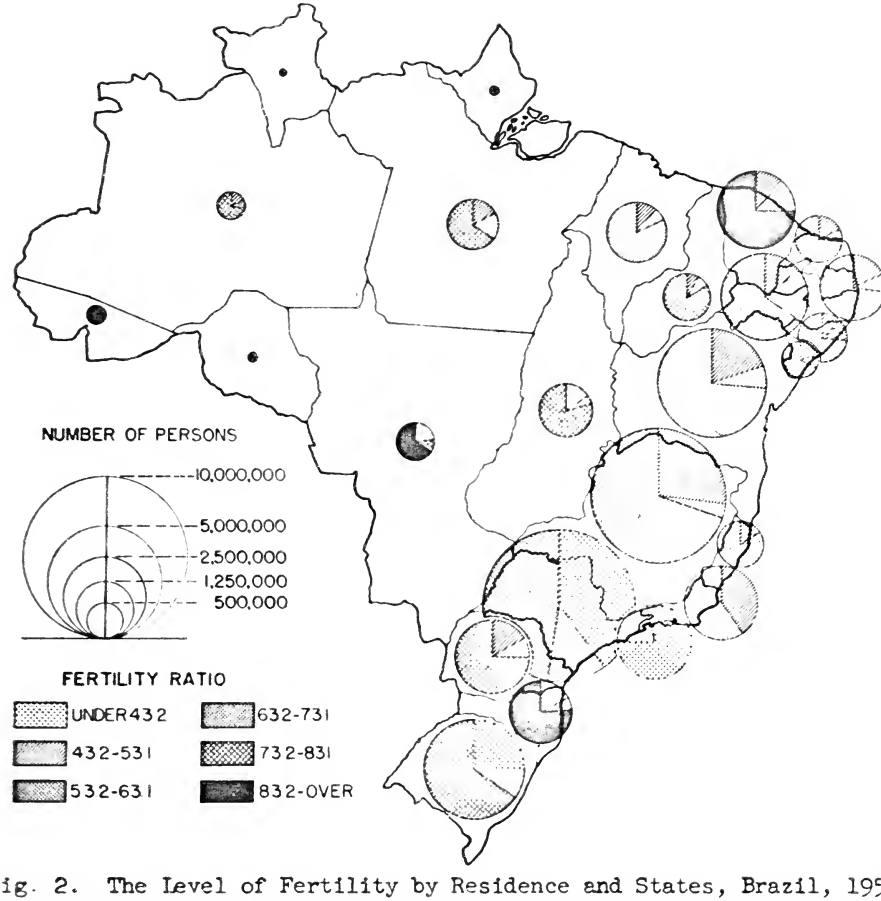

Fig. 2. The Level of Fertility by Residence and States, Brazil, 1950. (Starting at 12:00 on the circles and reading clockwise, the segments represent the urban, suburban and rural populations, respectively). Prepared from data in I.B.G.E., Conselho Nacional de Estatística, VI Recenseamento Geral do Brasil, Censo Demográfico (1 de julho de 1950), Seleção dos Principais Dados, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1951, 1952, 1953), passim.

fertility were sufficiently large in 1950, to place these residential classes in an increasingly high fertility category as one moves from the urban to the suburban to the rural category. In Alagoas and Goiás, although the suburban portion of the state has a higher rate of reproduction than the urban, this difference was not sufficiently large to place it in a higher category.

It is worthy of note that three of the most populous and most urban states (Rio Grande do Sul, São Paulo and the Federal District), possess the lowest rates of reproduction recorded for the urban segment of the population. All of these are located in the southernmost section of the country.

Only in Santa Catarina, Goiás, and Mato Grosso, does urban fertility fall into the rather high range of from 53.2 to 63.1 children 0-4 per 100 women aged 15-49.

Highest rural fertility is to be found in Santa Catarina, in the Southern region, Mato Grosso in the West Central region, in the territory of Acre in the Northern region, and, in confirmation of popular belief in Brazil, in the Northeastern state of Ceará.

The states possessing the lowest rate of reproduction in their rural areas are Bahia and Maranhão, in which the fertility ratio for that residential category falls in the 63.2 to 73.1 range, only one category above the rates recorded for the urban portion of Santa Catarina, Goiás, and Mato Grosso.

The greatest differentials to be observed between the urban and rural rate of reproduction occur in the states of Rio Grande do Sul,

São Paulo and Ceará.

Another indication of the influence of urbanity on fertility may be gained by examining the fertility ratio of the municipio containing the capital city, for each of the states (Table 6). Considerable variations occur in the fertility ratio for these areas, largely due to regional differentials in fertility (discussed in a subsequent chapter), and because of the varying proportion of the urban population in the municipios containing the state capitals. Nevertheless, it may be noted that two of the lowest fertility ratios obtained (37.6 and 36.8), are to be found in São Paulo and the Federal District, Brazil's largest urban centers, and that all capital municipios with a population of less than 140,000 possessed fertility ratios of 43.5 or over.

It is also worthy of mention that only one capital municipio with more than 140,000 inhabitants had more than 50 children 0-4 per 100 women aged 15-49; whereas six of the eleven capital municipios with populations of less than 140,000 exceeded that figure.

Residential Differentials in São Paulo

In order to further examine the influence of residence upon the rate of reproduction, a map of São Paulo was prepared showing the level of the fertility ratio in each of its 369 municipios (Fig. 3).

Due to the small size of the municipios the attempt was not made to show the size of the population of these political subdivisions. However, it may be noted that the greatest concentration of people occurs in the municipio containing the state capital, and in the area

TABLE 6

FERTILITY RATIOS FOR THE MUNICIPIOS CONTAINING THE CAPITAL CITIES, BRAZIL, 1950, BY STATES*

Municipio Containing Capital City	Population	Number of children under 5 per 100 women 15-49
Distrito Federal	2,377,451	36.8
São Paulo	2,198,096	37.6
Recife	524,682	46.6
Salvador	417,235	42.4
Porto Alegre	394,151	37.0
Belo Horizonte	352,724	45.3
Fortaleza	270,169	52.3
Belem	254,949	49.7
Niteroi	186,309	42.1
Curitiba	180,575	39.4
Manáus	139,620	57.4
Maceió	120,980	43.5
São Luis	119,785	44.1
João Pessoa	119,326	49.1
Natal	103,215	51.9
Teresina	90,723	58.6
Aracajú	78,364	46.9
Florianopolis	67,630	55.5
Cuiabá	56,204	64.1
Goiania	53,389	57.9
Vitória	50,922	44.3

*Source: Compiled and computed from data in I. B. G. E., Conselho Nacional de Estatística, Serviço Nacional de Recenseamento, VI Recenseamento Geral do Brasil, Censo Demográfico (1 de julho de 1950), Seleção dos Principais Dados, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1951, 1952, 1953, passim.

Fig. 3. The Distribution of the Fertility Ratio in São Paulo by Municipios, 1950. Prepared from data in VI Recenseamento Geral do Brasil, 1950, Estado de São Paulo, Censo Demográfico, (Rio de Janeiro: I. B. G. E., Conselho Nacional de Estatística, 1954), passim.

immediately surrounding it, with lesser concentrations of population stretching out from it in a northwesterly direction. The lowest density of population occurs in the western part of the state.[4]

A high degree of urbanity is indeed associated with low fertility, and the greatest urban concentrations may be detected on the map by observing the areas of lowest fertility which stretch from the southeast coast (Santos) to the metropolis of São Paulo, and on through the "old zone" of settlement.

The depressing influence on the rate of reproduction exerted by the state's large urban concentrations may be observed in the areas immediately surrounding the large cities, which are themselves characterized by very low fertility. In but a very few instances does a municipio adjacent to an area of lowest fertility (under 42.0) possess a fertility ratio sufficiently high to place it in the fourth fertility category of 60.0 to 68.9, or above. Other municipios of fairly low fertility (42.0 to 50.9)which occur at a distance from the state's largest cities, themselves contain fairly good sized urban populations.

Highest fertility rates in São Paulo are found to prevail in the highly rural "zones of new penetration" that stretch along the northern border of the state and extend westward and then southward

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[4]For the distribution of population in São Paulo as well as for Brazil as a whole, see T. Lynn Smith and Alexander Marchants, Eds., Brazil: Portrait of Half a Continent, (New York: The Dryden Press, 1951), p. 143.

to cover the western portion of the state's territory. In these very rural municipios, many of them created after 1945, the rate of reproduction reaches in many cases the astounding figure of 78.0 or more children under 5 years of age per 100 women in the child-bearing ages. Were infant and child mortality not such an important factor in the decimation of the inhabitants in the 0-4 age group, this rate would be even higher.

Residential Differentials in Bahia

In a further attempt to analyze residential differentials in the rate of reproduction, a map was prepared of the state of Bahia, showing the size of the population of the municipios and the level of the rate of reproduction in each (Fig. 4).

Bahia was chosen because of its contrast with São Paulo. Whereas São Paulo is one of the most highly urbanized and white states of the union, Bahia is very rural and a great proportion of its inhabitants fall into the black and mixed racial categories. Whereas São Paulo has been a major goal of internal migration, Bahia has contributed heavily to the migratory stream.

A careful examination of Figure 4 reveals that one of the lowest levels of fertility occurs in the capital municipio which also possesses by far the largest urban concentration.

The depressing effect on the rate of reproduction exerted by this large urban agglomeration can be observed in the municipios immediately surrounding it, all of which possess low levels of fertility, although in no case as low as that of the capital municipio (under 47.9).

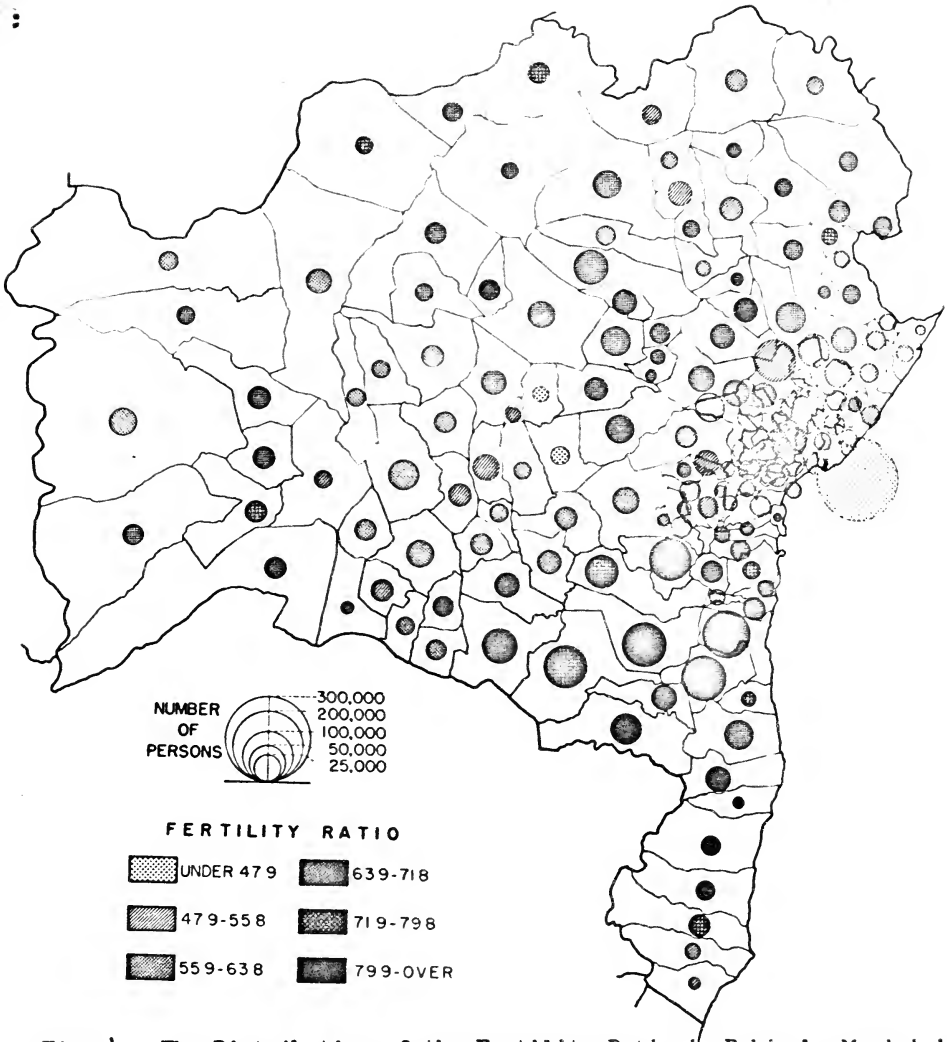

Fig. 4. The Distribution of the Fertility Ratio in Bahia by Municipios, 1940. Prepared from data in I. B. G. E., Recenseamento Geral do Brasil (1 de setembro de 1940), Censo Demográfico, População e Habitação, Serie Regional, Part XII, Vol. 1, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1950), passim.

Not surprisingly, the highest fertility ratios were recorded in the interior and highly rural portions of the state. From the standpoint of size of population, high rates of reproduction are to be found especially in the municipios that lie to the southwest of the state capital.

Attention should be called to a group of twelve municipios all lying outside the area of influence of the capital city, and characterized by extremely low fertility. These areas are surrounded by municipios of high fertility and constitute what might be termed "low fertility islands." Inasmuch as these subdivisions of the state territory are characterized by a high degree of rurality, and are mostly located at a good distance from the state capital, the rural-urban differential cannot be invoked as an explanation of this phenomenon.

Seven of these municipios lie in the central part of the state and to the south of it, two lie in the northeastern section of the state, and three are relatively close to the state capital. Two of these municipios possess levels of reproduction that place them in the lowest fertility category of under 47.9, a distinction they share only with the municipio harboring the state capital itself. The other municipios fall into the next fertility category ranging from 47.9 to 55.9, still very low for the state of Bahia.

An explanation of this anomaly is to be found in the fact that the municipios in question are mostly in areas of severe drought. This has resulted in considerable migration from these areas principally to southern Brazil, and especially to São Paulo.

This migratory stream, composed largely of males in the early years of adulthood characteristic of long distance migration, has resulted in a shortage of men in the reproductive years of life, which in turn has lowered the proportion of women in the fertile ages who are married, thus lowering the rate of reproduction. An examination of Figure 5, which gives the origin of migrants lodged in the migrant receiving station (hospedaria) in the city of São Paulo, reveals that the low fertility rural municipios in question are among those that contributed most heavily to the flow of migrants from Bahia that reached Sao Paulo. The only exceptions to this rule are the three municipios located closer to the state capital. It is probable that the depressing influence on fertility of the capital city combined with migration to it rather than to the south is responsible for the low rate of reproduction in these municipios.

The two low fertility municipios located in the northeastern section of the state are Juazeiro (on the state line) and Bonfim just to the south of Juazeiro. In addition to being an area that is losing heavily by migration, Juazeiro is the terminal point of one lap of the overland southward journey made by migrants from states farther to the north. Bonfim is a railway and communications center. It is likely that in these municipios, the pressures of a hostile environment are aided in the impetus they give to migration by the wide dissemination of news of the promised land to the south.[5]

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[5]For a substantial discussion of migration from Bahia and the Northeast, see Smith, op. cit., pp. 272-81.

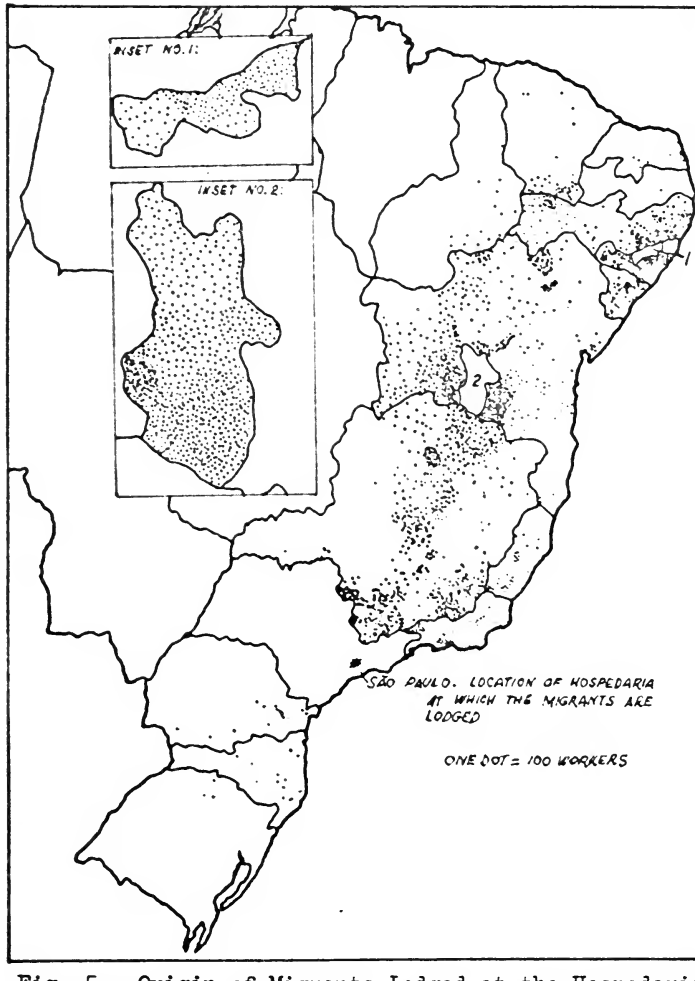

Fig 5 Origin of Migrants Lodged at the Hospedaria in São Paulo, 1935-1940. After T. Lynn Smith, Brazil: People and Institutions, Revised Edition, (Baton Rouge: Louisiana State University Press, 1954), p. 276.

Since the data presented in Fig. 5 for Bahia are for 1935-1940, the significance of this map is heightened, inasmuch as it covers the five year period preceding 1940, and thus relates to the period when the children 0-4 used for the computation of the 1940 fertility ratio for Bahia were coming into the world.

In order to gauge the effect of outward migration on the populations of the municipios in question, these were compared with those municipios in the state possessing exceptionally high fertility--falling in the 71.9 to 79.8 range and into the 79.9 and over range. These two groups of municipios of low and high fertility were compared with regard to the sex ratio in the reproductive ages, and in relation to the proportion of married females in the fertile age groups.

Table 7 presents the results of the comparison of the sex ratios in the reproductive age groups in each group of municipios. A low sex ratio or a low proportion of men in the population aged 15-49 in the low fertility municipios is evident. The total sex ratio for these municipios in the age group in question is but 81.8 men per 100 women. In municipios of high fertility there are 97.8 men per 100 women for the 15-49 age group. The same differential in the sex ratio is revealed in the 15-29 age range in the two groups of municipios. Of special significance however, is the acute shortage of men in the low fertility municipios in the most reproductive ages--20-29. In this age group there are only 76.3 men per 100 women in the low fertility municipios as compared with 93.9 men per 100 women in those exhibiting high fertility.

TABLE 7

SEX RATIOS AMONG SPECIFIED AGE GROUPS IN THE MUNICIPIOS OF BAHIA WHICH HAD THE HIGHEST AND LOWEST FERTILITY RATIOS, 1940*

Municipio	Sex Ratio 15-49	Sex Ratio 20-29	Sex Ratio 15-29
(Municipios of Low Fertility)			
Amargosa	80.4	75.2	77.6
Areia	82.6	76.6	79.0
Anchieta	78.6	69.0	74.4
Andaria	97.8	88.5	90.5
Bom Jesus Dalapa	79.1	76.6	79.7
Bomfim	76.5	72.7	74.4
Esplanada	79.8	76.1	80.2
Guanambi	98.1	96.8	107.1
Juazeiro	76.6	71.0	75.1
Lençois	94.0	86.2	88.7
Palmeiras	93.5	93.8	93.2
Paramirim	67.5	59.3	64.1
Total	81.8	76.3	80.2

TABLE 7 continued

SEX RATIOS AMONG SPECIFIED AGE GROUPS IN THE MUNICIPIOS OF BAHIA WHICH HAD THE HIGHEST AND LOWEST FERTILITY RATIOS, 1940*

Municipio	Sex Ratio 15-49	Sex Ratio 20-29	Sex Ratio 15-29
(Municipios of High Fertility)			
Alcobaça	107.3	106.6	103.4
Boa Nova	98.3	91.6	91.0
Camamú	106.6	100.1	100.5
Casa Nova	89.5	87.1	88.8
Conc. do Coite	96.4	90.6	94.9
Conquista	95.1	91.4	91.4
Encruzilhada	101.3	98.4	95.5
Ireçê	95.6	90.4	92.0
Nilo Peçanha	101.8	91.8	94.8
Pilão Arcado	92.1	85.0	89.6
Poções	96.8	96.2	93.2
Pombal	91.7	92.1	89.1
Porto Seguro	103.2	94.1	94.7
Sta. Cruz Cabralia	118.0	112.6	107.9
Santa Maria	79.7	73.4	77.8
Una	136.9	128.7	121.4
Total	97.8	93.9	93.2

*Source: Compiled and computed from data in I. B. G. E. Recenseamento Geral do Brasil (1 de setembro de 1940), Censo Demográfico, População e Habitação, Serie Regional, Part XII, Vol. 1, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1950), passim.

The migration caused shortage of men in municipios exhibiting a low rate of reproduction is also reflected in the proportion of women in the childbearing ages who are married (Table 8). In low fertility municipios the proportion of women in the fertile ages who are married is much lower than in the municipios of high fertility. Here again the disproportion between the two groups of municipios is especially large in the most fertile ages. Of those women who fall in the 20-39 age group, only 51.5 percent are married in the low fertility municipios, whereas in those municipios with a high rate of reproduction, the proportion reaches 68.5 percent.

Residential Differentials in Santa Catarina

Estimated birth rates in Santa Catarina municipios in 1940 were calculated by the Brazilian Institute of Geography and Statistics. Although the rates obtained for the more rural portions of the state can be regarded as no more than fair approximations, the rates for the more urban areas are probably reasonably accurate due to better registration of vital statistics.

The territorial distribution of the estimated birth rates for Santa Catarina is presented in Figure 6. As was expected, lowest birth rates (under 35.0) are to be found in the municipios harboring the two principal cities of the state--Joinville and Blumenau. The municipios adjacent to them also possess low birth rates. All but two of the municipios falling into the rather low 35.1 to 40.0 birth rate category are contiguous with the two highly urban municipios. None of the municipios falling into the two highest estimated birth

TABLE 8

PROPORTIONS OF FEMALES MARRIED AMONG SPECIFIED AGE GROUPS IN THE MUNICIPIOS OF BAHIA WHICH HAD THE HIGHEST AND LOWEST FERTILITY RATIOS, 1940*

Municipio	Married females 20-39 as a percent of all females 15-49	Married females 20-39 as a percent of all females 20-39
(Municipios of Low Fertility)		
Amargosa	27.7	47.6
Areia	28.0	47.5
Anchieta	31.8	51.4
Andaria	30.0	47.0
Bom Jesus Dalapa	34.2	55.1
Bomfim	31.5	53.1
Esplanada	30.8	51.9
Guanambí	31.1	54.0
Juazeiro	33.4	53.4
Lençois	29.9	47.3
Palmeiras	32.4	52.5
Paramirim	33.8	55.4
Total	31.2	51.5

TABLE 8 continued

PROPORTIONS OF FEMALES MARRIED AMONG SPECIFIED AGE GROUPS IN THE MUNICIPIOS OF BAHIA WHICH HAD THE HIGHEST AND LOWEST FERTILITY RATIOS, 1940*

Municipio	Married females 20-39 as a percent of all females 15-49	Married females 20-39 as a percent of all females 20-39
(Municipios of High Fertility)		
Alcobaça	43.5	71.5
Boa Nova	43.5	71.5
Camamú	29.0	47.4
Casa Nova	39.8	63.3
Conc. do Coite	41.3	68.4
Conquista	40.9	68.4
Encruzilhada	49.9	81.7
Irecê	42.9	68.8
Nilo Peçanha	32.4	52.1
Pilão Arcado	42.3	67.2
Poções	42.4	70.7
Pombal	39.1	65.2
Porto Seguro	46.0	75.8
Sta. Cruz Cabralia	42.8	64.4
Santa Maria	39.1	63.4
Una	46.8	72.6
Total	41.8	68.5

*Source: Compiled and computed from data in I. B. G. E., Recenseamento Geral do Brasil (1 setembro de 1940), Censo Demográfico, População e Habitação, Serie Regional, Part XII, Vol. 1, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1950), passim.

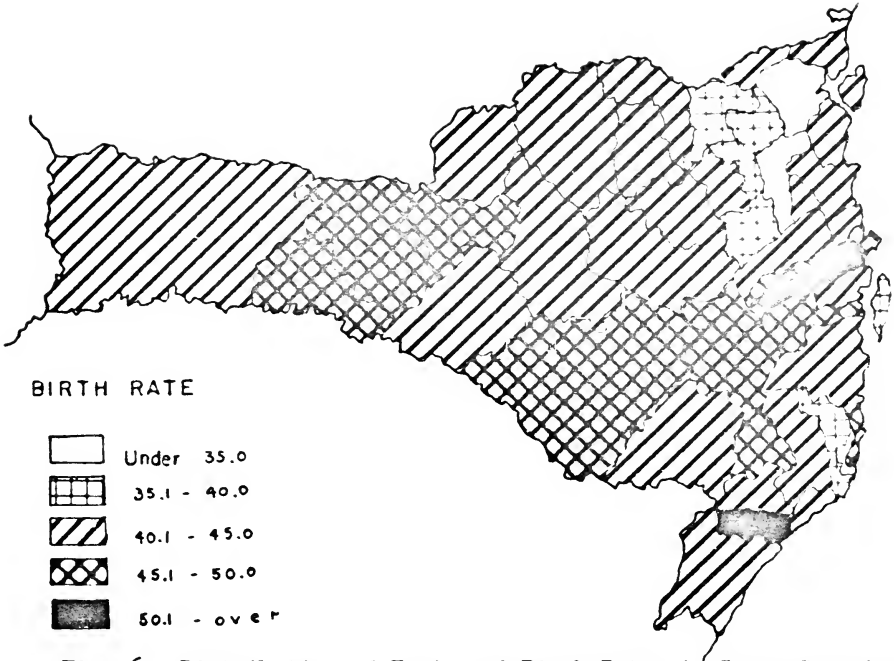

Fig. 6. Distribution of Estimated Birth Rates in Santa Catarina, 1940. After I. B. G. E., Estudos de Estatística Teórica e Aplicada, Estatística Demográfica No. 10, Pesquisas Sobre a Natalidade no Brasil, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1950), p. 135.

rate categories (45.1 to 50.0 and 50.1 and over), are adjacent either to the municipios of lowest fertility (under 35.0) or to those municipios in the next category (35.1 to 40.0) that are adjacent to the municipios of lowest fertility.

Trends in Rural-Urban Differentials

Unfortunately, among the many deficiencies of the Brazilian censuses has been the failure to provide age and sex data for the various residential categories. This important tabulation was presented for the first time in the summary volumes of the 1950 census.

It becomes necessary therefore, when dealing with previous censuses, or when wishing to make a comparison of data for the various census years, to resort to a substitute device for gauging rural and urban levels of fertility. Such a device is employed in Table 9 . The capital city of each state is with one minor exception the largest urban center of that state. The range in size from the capital city to the next largest urban center is in most states very considerable. As a result, an approximation of the rural-urban dichotomy can be achieved by considering the municipio of the capital city as urban, and the remainder of the state as rural.

It should be noted that in using this comparison, the rural portion of the capital municipio is classed as urban and that the urban portions of the remainder of the state are classed as rural. Therefore, if "pure" urban and rural categories could be used in computing the fertility ratio, the "urban" figure would be lowered and the "rural" raised, thus resulting in greater differentials.

Analysis of Table 9 shows that Brazil is no exception to the general rule of lower fertility in urban than in rural areas. Whether the rural-urban comparison of the rate of reproduction be made in 1920, 1940 or 1950, the conclusion is the same. Only in one instance that of the territory of Guaporé in 1950, is urban fertility higher than rural fertility as measured by the capital municipio-remainder of state dichotomy. The reader will also note that rural-urban differentials for the territories of Amapá, and Guaporé are surprisingly small.

No significance should be attached to this however. These territories had extremely small populations in 1950--Amapá possessing 37,477 inhabitants, Guaporé 36,935 people and Rio Branco only 18,116. The capital municipio of these frontier territories contains a majority of the population. 54.9 percent of the population of Amapá lives in the capital municipio, and like percentages for Guaporé and Rio Branco are 73.8 and 95.2. Of the population of these capital municipios only a small number and proportion are urban. The proportion of city dwellers in the capital municipios of Amapá, Guaporé and Rio Branco in 1950 was only 11.2 percent, 16.4 percent and 25.7 percent, respectively. In the case of Rio Branco where the "reverse" differential is observed, the total number of women 15-49 plus the total number of children 0-4 present in the capital municipio add to less than 300.

In all states and the one territory of the Northern region of Brazil for which data is available for more than one census year,

TABLE 9

FERTILITY RATIOS FOR THE MUNICIPIO CONTAINING THE STATE CAPITAL AND THE REMAINDER OF THE STATE, 1920, 1940 AND 1950*

Region and State	Capital Municipio Fertility Ratio(1)			Remainder of State Fertility Ratio(1)		
	1920	1940	1950	1920	1940	1950
North						
Acre(2)	----	67.7	79.0	----	92.4	93.9
Amapá(2)	----	----	70.0	----	----	78.2
Guaporé(2)	----	----	72.0	----	----	76.0
Rio Branco(2)	----	----	84.4	----	----	69.0
Amazonas	48.4	47.7	57.4	69.5	77.8	81.0
Pará	41.3	43.9	49.7	59.5	66.6	73.5
Northeast						
Maranhão	30.4	41.1	44.1	55.1	68.8	66.9
Piauí	50.6	53.5	58.6	63.5	75.0	77.5
Ceará	33.7	46.9	52.3	56.6	79.5	80.4
R. G. do Norte	34.9	41.1	51.9	62.2	70.0	76.4
Paraíba	42.5	46.1	49.1	64.6	70.9	71.9
Pernambuco	34.1	37.3	46.6	59.5	65.3	69.5
Alagoas	29.1	34.3	43.5	59.0	66.8	72.6

TABLE 9 continued

FERTILITY RATIOS FOR THE MUNICIPIO CONTAINING THE STATE CAPITAL AND THE REMAINDER OF THE STATE, 1920, 1940 AND 1950*

Region and State	Capital Municipio Fertility Ratio(1)			Remainder of State Fertility Ratio(1)		
	1920	1940	1950	1920	1940	1950
East						
Sergipe	31.1	36.7	46.9	53.0	66.7	73.1
Bahia	32.3	38.4	42.4	60.9	64.5	68.1
Minas Gerais	42.8	39.8	45.3	69.9	67.7	68.4
Espirito Santo	45.6	44.9	44.3	74.2	77.8	76.9
Rio de Janeiro	42.7	43.5	42.1	65.2	68.2	69.5
Distrito Federal	40.9	36.5	36.8	----	----	----
South						
São Paulo	46.0	34.8	37.6	70.0	66.2	65.1
Paraná	49.7	40.6	39.4	70.4	74.4	77.1
Santa Catarina	40.6	48.3	55.5	73.5	79.3	81.8
R. G. do Sul	39.3	34.1	37.0	70.3	68.5	69.8
West Central						
Goiás	54.5	66.7	57.9	63.1	70.7	72.7
Mato Grosso	53.1	58.6	64.1	71.0	74.0	78.4

*Sources: 1920 data from T. Lynn Smith, Brazil: People and institutions, (Baton Rouge: Louisiana State University Press, 1947), p. 238. 1940 data compiled and computed from data in I. B. G. E., Recenseamento Geral do Brasil (1 de setembro de 1940), Censo Demográfico, População e Habitação , Serie Regional, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1950, 1952), passim. 1950 data compiled and computed from data in I. B. G. E., Conselho Nacional de Estatística, Serviço Nacional de Recenseamento, VI Recenseamento Geral do Brasil, Censo Demográfico (1 de julho de 1950), Seleção dos Principais Dados, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1951, 1952, 1953), passim.

(1) Fertility ratio determined as follows: $\frac{\text{children under 5}}{\text{women 15-49}}$ X 100.

(2) Territory.

fertility has increased from one census year to another in both the rural and urban portions of the population. The same conclusions may be reached concerning the Northeastern region with the single exception of a small decline between 1940 and 1950 in the rate of reproduction of the rural portion of Maranhao.

Of the six states in the Eastern region, three (Sergipe, Bahia and Minas Gerais) follow the lead set by those in the Northern and Northeastern regions in that they show a consistent increase in fertility in both the urban and rural categories, from 1920 to 1940 and from 1940 to 1950. The only exception is the slight decrease in the rural portion of Minas Gerais from 1920 to 1940, followed by an increase from 1940 to 1950, bringing the 1950 fertility ratio practically to the level of the 1920 one.

In Espírito Santo a slight decrease is seen in the urban portion from census year to census year, and a slight decrease is observed for the rural areas from 1940 to 1950. The rate of reproduction in urban areas remained practically unchanged in Rio de Janeiro from 1920 to 1940 and increased in the rural portion during that period. The Federal District which is almost in its entirety urban showed a decrease in fertility from 1920 to 1940 with fertility in 1950 remaining practically at the 1940 level.

In the rural portion of the four states constituting the Southern region, the national trend of increasing fertility is observed in Paraná, Santa Catarina, and Rio Grande do Sul. Only in São Paulo is the opposite tendency in evidence, the rural fertility ratio for that state having declined from 70.0 in 1920 to 66.2 in 1940 to 65.1 in 1950.

In the urban areas of the states in the Southern region, only Paraná and Santa Catarina show a consistent trend. In Paraná this amounted to a very sharp decrease in fertility from 1920 to 1940, followed by a slight decrease from 1940 to 1950. In Santa Catarina on the other hand, fertility consistently increased from 1920 to 1950. São Paulo and Rio Grande do Sul both showed the same type of variation--in their urban rate of reproduction--a decrease from 1920 to 1940, followed by an increase from 1940 to 1950, which however was insufficient to bring them back to the 1920 level.

In the West Central region, composed only of the states of Goiás and Mato Grosso, a consistent increase in the rate of reproduction is also observed in the rural section from 1920 to 1950. In Mato Grosso the same tendency is evidenced in the urban section. In Goiás a slight decrease occurred between 1940 and 1950 in the urban category, preceded by an increase from 1920 to 1940. This decrease was not sufficient however to bring the 1950 figure below that for 1940.

It is difficult if not impossible to determine the fluctuations in the birth rate for Brazil except for a few areas of fairly adequate registration. It is probable however, that the birth rate has remained more or less constant, and that the fluctuations observed in the fertility ratio are to be explained in large measure by two factors: a decline in infant mortality and continued rapid urbanization.

Infant mortality in Brazil is undeniably high. Since the fertility ratio is based on children 0-4, a reduction in the deaths of children under one year of age, will cause an increase in the fertility ratio

if the birth rate remains the same. Similarly, a reduction of mortality in the 1-4 age group will have the same effect. When a high level of mortality in the tender ages prevails, caused largely by infectious and communicable diseases, considerable reductions in the deaths of infants and children may be accomplished by the introduction of a few simple methods of sanitation and child care.

Counteracting the inflating effect on the fertility ratio of reduced mortality in the first years of life, are the pressures of an urban mode of life that are known to have a depressing effect on the birth rate. Thus it is possible that increases in the fertility in states such as Ceará and Sergipe, where urbanization has been slow, may be due to a reduction of the mortality of children under five and especially in the 0-1 age group. In states such as São Paulo and in the Federal District, where fertility has decreased or has shown little change, it has probably done so in spite of reduced infant mortality, as a result of rapid urbanization.

Although infant mortality rates are available for only a few areas in Brazil because of the general under-registration of births and deaths, those for the Federal District and some of the state capitals where more or less adequate registration of vital statistics exists, may be indicative of the general trend.

Mortara gives fairly satisfactory estimates of the number of deaths of infants under one year old per thousand live births in the Federal District for the years 1939-1950 (Table 10). This table clearly indicates that infant mortality steadily decreased in the

Federal District during the 1939-1950 period. In view of this, the rapid urbanization that the Federal District has experienced, increasing in urbanity from 46.2 percent in 1940 to 74.8 percent in 1950, must be adjudged the major cause of the lack of change in the rate of reproduction in that area from 1940 to 1950.

TABLE 10

INFANT MORTALITY IN THE FEDERAL DISTRICT, 1930 TO 1950*

Year	Infant Mortality
1939	177.96
1940	165.93
1941	168.95
1942	148.48
1943	137.07
1944	147.07
1945	118.74
1946	118.23
1947	108.48
1948	110.17
1949	101.37
1950	100.50

*Source: I.B. G. E., Estudos de Estatística Teórica e Aplicada, Estatística Demográfica No. 14, Estudos Sobre a Natalidade e a Mortalidade no Brasil, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1952), p. 16.

Similar conclusions can be reached by an examination of Table 11 which gives the probability of death per thousand and life expectancy for age 0, 1 and 5 for the 1939-1941 period and for 1950 in the Federal District.

TABLE 11

PROBABILITY OF DEATH AND LIFE EXPECTANCY FOR AGES 0, 1 AND 5, IN THE FEDERAL DISTRICT, 1939-1941 AND 1950*

Age	Probability of Death Per Thousand 1939-1941	1950	Life Expectancy 1931-1941	1950
0	159.24	98.02	42.31	52.51
1	66.52	36.75	48.23	57.16
5	6.09	3.05	51.32	56.75

*Source: I. B. G. E., Estudos de Estatística Teórica e Aplicada, Estatística Demográfica No. 13, Pesquisas Sobre o Desenvolvimento da População do Brasil, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1951), p. 38.

Not only has the probability of death for the under 1 age group been substantially reduced and life expectancy increased, but the same is also true of those persons one year old and five years old, indicating a reduction in mortality at all age levels under 5.

That reduced infant mortality has not been restricted to the Federal District can be seen from Table 12.

TABLE 12

INFANT MORTALITY IN FIVE STATE CAPITALS, 1940 AND 1950*

Capital	Infant Mortality Rate	
	Years next to 1940	Years next to 1950
São Paulo	135.21	86.05
Recife	267.03	243.56
Salvador (Bahia)	201.40	162.57
Porto Alegre	187.46	107.26
Belém	159.67	110.96

*Source: I. B. G. E., Estudos de Estatística Teórica e Aplicada, Estatística Demográfica No. 16, Pesquisas Sobre a Natalidade no Brasil, (Rio de Janeiro: Conselho Nacional de Estatística, I. B. G. E., 1953), p. 84.

Although the figures given are estimates most of them are probably reasonably accurate.

CHAPTER V

RACIAL DIFFERENTIALS IN FERTILITY

The racial composition of Brazil's population and the differentials among the rates of reproduction of the various racial groups, are of great interest. Brazil is truly a "melting pot" into which have been introduced representatives of all the major racial stocks of mankind.

First among these were the caucasoids, in the form of Portuguese officials, soldiers and settlers who found the country already inhabited by members of the mongoloid race, represented by the original Indian inhabitants. The Portuguese were soon followed by Negroids, slaves imported from Africa for the purpose of working the mines and plantations of the expanding economy. In more recent times, large contingents of Portuguese, Italians, Spaniards, Germans, Poles and other caucasian stocks, and a large number of Japanese have been introduced into the country; the latter together with their descendants numbered in 1950 more than 300,000.

Largely due to the abolitionist zeal of a Minister of Finance (Rui Barbosa) who in 1891, shortly after the abolition of slavery, ordered all records pertaining to the slave traffic destroyed,[1] much less is known about the racial composition of the Brazilian population of a century ago than would otherwise be the case. Among our principal

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[1]Arthur Ramos, The Negro in Brazil, (Washington: The Associated Publishers, Inc., 1939), p. 5

sources for this information are, in addition to such official records as survived, the estimates and accounts of those indefatigable globe-trotters who for various reasons left their Victorian comforts of home to take up residence for shorter or longer periods in what to them must have seemed, at least on departure, the barbaric and primitive shores of Brazil.

One of these, Thomas Ewbank, writing in 1856, cites a newspaper article appearing in the Diario of December 11, 1847, written by a "Senhor de Sousa, a native statistician." According to this authority, the population of Brazil was at that time, 7,360,000, a figure which excluded "untamed Indians," estimated at 800,000. Of those included in the total, 2,160,000 or 29.3 percent were classified as white, 3,120,000 or 42.4 percent as Negro slaves; 1,100,000 or 15.0 percent as free colored (meaning mixed-bloods); 800,000 or 10.9 percent as domesticated Indians; and finally, 180,000 or 2.4 percent as free blacks.[2] It should be stressed that this estimate as well as the many others pertaining to the population before 1872, the date of the first census, are at best educated guesses.

The figures cited by Ewbank, even if containing large errors, are eloquent testimony of the extent to which racial miscegenation occurred in Brazil, practically all of it between Portuguese and Negroes or Portuguese and Indians, since little crossing between Negroes and

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[2]Thomas Ewbank, Life in Brazil, or a Journal of a Visit to the Land of the Cocoa and the Palm, (New York: Harper Brothers, 1856), pp. 431, 432.

Indians is believed to have existed. Consequently, the Portuguese contributed to the racial composition of the population far out of proportion to their numbers.

The Portuguese were themselves the products of prolonged and extensive miscegenation. Having been overrun by various nations and tribes, and finally going through several centuries of Moorish occupation, Portugal acquired as a result of the many contacts with alien cultures, a "social plasticity" not possessed by any other European nation. The Portuguese colonist was always ready to compromise and brought with him no fixed prejudices. Because of the superior status which the Moors enjoyed in Portugal for centuries, the Portuguese considered them, including even more Negroid types as worthy of respect, prestige and even marriage.

These attitudes of the Portuguese combined with the scarcity of white female settlers in Brazil, served to produce a period of great miscegenation. The attempt by a nation of 1,200,000 people to colonize effectively an area as vast as that of Brazil, was a staggering task. Indeed in 1550, half a century after discovery, only 3,000 colonists, a large majority of them men, resided in Brazil.[3]

Under these conditions it became a matter of necessity and even policy to permit if not encourage miscegenation with the local population. That miscegenation did occur on a large scale first with the

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[3]Fernando de Azevedo, Brazilian Culture,(New York: The Macmillan Company, 1950), p. 31.

Indian and then with the Negro is unmistakable.

It was during the first century of colonization especially, that the mixture occurred between the Portuguese and the Indian:

> The European landed sliding on nude Indians; even priests of the Company had to go shore with care so as not to become immersed in flesh... The women were the first to give themselves to the white men, the more ardent ones rubbing themselves against the legs of those they supposed to be gods.[4]

Truly the Portuguese have never been surpassed or equaled in their miscibility. On arrival the Portuguese "mixed himself deliciously with women of color...multiplying himself in mestizo children," so that a handful of aggressive Portuguese were able to gain possession of vast areas in competition with other colonial powers. Another factor in this miscegenation was the Portuguese ideal of beauty, acquired from prolonged contact with the Moors. This ideal, contrary to that in existence in other parts of Europe, was that of the enchanted Mooress,

> a delicious type of dark women with black eyes, wrapped in sexual mysticism--always wearing red, always combing her hair or bathing in rivers or in the waters of haunted fountains.[5]

It is easy then to understand why the Portuguese felt no reluctance in entering into sexual relations with the Indian woman who strongly resembled the physical type idealized by them. Indeed, even if they had not a taste for exotic women, there would have been no other choice.

At the time when the Indian population along the coast had either

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[4]Gilberto Freyre, Casa Grande e Senzala, (Rio de Janeiro: Jose Olympio, 1946), Vol. 1, p. 209.

[5]Ibid., p. 93

been driven inland or been almost completely absorbed, a sufficient number of Negro women were imported as slaves for the process of racial mixture to continue on an extensive basis.

The latifundium was an important factor in the fostering of racial miscegenation. Conditions on the great plantations of colonial Brazil were highly conducive to the fusion of the races. Oliveira Vianna states that

> In reality during the Colonial epoch the latifundium was the breeding field par excellence. In it the whites--the owners, their relatives, their agregados--exercised a dominating role. They were the sires, the great impregnators of the Indian women, the fiery stallions of the Negro females. Some of them, even among the most noble, left only "filhos naturaes e pardos" (illegitimate children and mulattoes) according to the testimony of the Conde da Cunha.... The half bloods, are, then, a historical product of the latifundia.[6]

The female Negro slave came to play an important role in Brazilian family life. A Negro boy was the first playmate of the slave-owner's children and a mulatto girl more often than not initiated the son of the master into sexual experience. The superior position of the slave owner, aided by a widely prevalent double sex standard, facilitated and encouraged the fusion of the races and a proliferation of progeny who were half white, and who in turn fused with others of varying combinations of color until according to the source quoted by Ewbank there were in 1847 more than one million mixed bloods in the country. Rugendas writes that

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[6]F. J. Oliveira Vianna, Populações Meridionaes do Brasil, (São Paulo: 1938), pp. 78-79, quoted in T. Lynn Smith, Brazil: People and Institutions, Revised Edition, (Baton Rouge: Louisiana State University Press, 1954), p. 149.

> marriages between white men and colored women are very common in the middle and lower classes, and there is nothing shocking about them some occur even in the higher classes. They only are formalized when a white woman from a rich and well-known family marries a man of very dark color, but such unions are reason for surprise rather than censure.[7]

Perhaps the situation with regard to the racial composition of the Brazilian population has been best summarized by Oliveira Vianna, who, after a lengthy discussion of the great variations present among the Brazilian Indians, the Negro slaves and the white stocks that contributed to the racial make-up of the nation, states:

> These three fundamental races so different and diverse, fuse in our territory in varying proportions, according to the greater or lesser degree of the concentration of each at this or that point of habitable territory. In some regions, Indian elements dominate and preponderate in their miscegenetion with the whites: in others, Negroes are the principal basis of the fusion: in still others, the percentage of white elements is higher, and the emergent ethnic type reflects in its characterization this particular condition of its genesis. Because of this diversity in the geographic distribution of the three formative races, regional ethnic types do not reveal the same unity of morphological characteristics, or the same identity of temperament and mentality; which results in the impossibility from the point of view of anthropology and ethnology, of binding them together in a single national type.[8]

The Meaning of "Color" and Census Color Categories

In discussing the racial categories in Brazil, it is necessary to keep in mind the peculiarly Brazilian concept of color. This concept is based largely on social status In cases in which the individual is of mixed blood, and is neither obviously white nor obviously

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[7] João Mauricio Rugendas, Viagem Pitoresca Atraves do Brasil, (São Paulo: Livraria Martins Editora. 1941), p. 95.

[8] F. J. Oliveira Vianna, Evolução do Povo Brasileiro (São Paulo: Monteiro Lobato e Cia., ca. 1922), pp. 121-22.

black, his classification into either the white, black, or mulatto category is largely dependent upon his position in the social pyramid, always with preference given to the lighter color.

That this situation is not of recent origin is evidenced by Koster, who writing in 1817 commented upon the malleability of the definition of "white", pointing out that a mulatto will enter a religious order or the magistrature so long as his documents say he is "white", although he obviously is not, and relates an incident which clearly illustrates the point.

> In conversing on one occasion with a man of colour who was in my service, I asked if a certain Capitam-mor was not a mulatto man; he answered, "he was, but is not now." I begged him to explain, when he added, "Can a Capitam-mor be a mulatto man?"[9]

The situation regarding the changing definition of a man's color according to his social class, is well summarized in the popular saying that "a rich Negro is white, and a poor white Negro." Dark mulattoes may be found in the membership of exclusive upper-class clubs and associations in contradiction of the discriminatory attitudes assumed by the club. The explanation usually given is that these men are not regarded as being colored. To them have been ascribed such qualities as honesty, wealth, good manners, professional competence, and so forth, that raises them out of the mulatto category and places

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[9]Henry Koster, Travels in Brazil, (Philadelphia: M. Carey and Sons, 1817), Vol. II, pp. 175-76.

them on the same level as white people.[10]

As a result, the racial categories presented in the Brazilian census do not, as is also the case in the United States census, correspond to an anthropological classification of the population into racial groups. No doubt, many who are classed as white more properly belong in the mixed category, and many who are classified as mixed-bloods, would be better considered as black. Since to be considered black is by far the least desirable of the three choices, the number that "anthropologically" belong in this color group is probably the most distorted.

An examination of census results and procedures with regard to color in 1940 and 1950 may throw some light on this question.

In 1940, the census enumerator was given the task of classifying the persons interviewed as to racial affiliation. It is probable that there was a tendency on the part of the enumerator to place some persons who might consider themselves to be white in the mixed-blood category, and to place others who might consider themselves to be of mixed-blood in the black category. In the 1950 census, "the declaration [of color] was left to the discretion of the person being enumerated, lending in this manner, greater veracity to the results of the census."[11]

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[10] Emilio Willems, "Race Attitudes in Brazil," The American Journal of Sociology, Vol. LIV, No. 5, (March, 1949), pp. 402 ff.

[11] VI Recenseamento Geral do Brasil, 1950, Estado de São Paulo, Censo Demográfico, (Rio de Janeiro: I. B. G. E., Conselho Nacional de Estatística, 1954), p. xviii.

This procedure which the National Census Commission thought would result in greater veracity of the results of the census, could be expected to result in the self-enumeration of many persons as being mixed, who would probably be judged black by the census enumerator, and in the self-enumeration of others as white who would probably have been placed in the mixed category by the census taker.

Rios, speaking of the racial categories as presented in the 1940 census states:

> Frequently among us, the individual enumerated as black or mixed by the overcautious census taker, is not so classified by his friends or associates /or, it might be added by himself _/. Sometimes the position he holds or the status that he occupies confer upon him an artificial whitening.[12]

The Brazilian Institute of Geography and Statistics, in analyzing the results of the 1940 census states:

> With regard to whites one can affirm with certainty that the number enumerated considerably exceeds that which would result from a classification based on objective criteria.
>
> The number of blacks enumerated would on the contrary be considerably inferior to reality if the declaration were to be made by those being enumerated, but one must remember that ...in some cases numerous mixed-bloods were included among those classed as black.
>
> The number of mixed-bloods enumerated probably is below that which would result from an objective classification, and the number of mixed-bloods classified as whites is probably larger than the possible excess in favor of the mixed bloods, in the exchange of classification with the blacks.[13]

Thus it would seem that when the enumerator classifies the enumerated as to color, the tendency is to place the enumerated in a

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[12]José Arthur Rios, "Mudanças na Distribuição Racial no Estado do Rio," Sociologia, Vol. XII, No. 2, (maio de 1950), pp. 131-32.

[13]Quoted in Ibid., p. 143

darker racial group than that in which he would place himself.

Some confirmation of these suppositions is to be found in the data presented in Table 13. Of particular interest is what otherwise would be the startling decrease of blacks in the population from 1940 to 1950. Although as will be seen below, the black segment of the

TABLE 13

THE POPULATION OF BRAZIL CLASSIFIED ACCORDING TO COLOR, 1940 and 1950*

Color	Number		Percent	
	1940	1950	1940	1950
White	26,171,773	32,027,661	63.47	61.66
Black	6,035,869	5,692,657	14.64	10.96
Yellow	242,320	329,082	0.59	0.63
Mixed	8,744,365	13,786,742	21.20	26.54
Undeclared	41,933	103,255	0.10	0.21

*Source: I. B. G. E., Conselho Nacional de Estatística, VI Recenseamento Geral do Brasil, Censo Demográfico (1 de Julho de 1950), Estados Unidos do Brasil, Seleção dos Principais Dados, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1953), p. 1.

population reproduces at a slower pace than the other racial groups, it seems unlikely that they are failing to replace their numbers even considering the loss to their racial category that occurs when interracial mating produces mixed rather than black offspring. It would seem likely therefore, that the self-enumeration of color used in the 1950 census tended as expected to reduce sharply the number of people included in the black category.

This tendency can be clearly seen in Table 14. The very large

TABLE 14

THE POPULATION OF BRAZIL CLASSIFIED AS BLACK, BY STATES, 1940 AND 1950*

Region and State	Percent Black 1940	Percent Black 1950
North[1]		
Acre[2]	14.2	5.2
Amazonas	7.2	3.4
Pará	9.5	5.4
Northeast		
Maranhão	27.6	15.8
Piauí	31.9	12.9
Ceará	23.3	10.4
Rio Grande do Norte	13.4	9.5
Paraíba	13.7	13.0
Pernambuco	15.5	9.3
Alagoas	13.8	7.4
East		
Sergipe	18.7	14.2
Bahia	20.1	19.2
Minas Gerais	19.3	14.6
Espírito Santo	17.1	11.9
Rio de Janeiro	21.3	17.7
Distrito Federal	11.3	12.3

TABLE 14 continued

THE POPULATION OF BRAZIL CLASSIFIED AS BLACK, BY STATES, 1940 AND 1950

Region and State	Percent Black 1940	Percent Black 1950
South		
São Paulo	7.3	8.0
Paraná	4.9	4.3
Santa Catarina	5.2	3.6
Rio Grande do Sul	6.6	5.2
West Central		
Mato Grosso	8.5	9.7
Goiás	16.9	10.1
Brazil	14.6	11.0

*Sources: 1940 figures compiled and computed from data in I. B. G. E., Recenseamento Geral do Brasil (1 de setembro de 1940), Censo Demográfico, População e Habitação, Serie Regional, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1950, 1952), passim. 1950 figures compiled and computed from data in I. B. G. E., Conselho Nacional de Estatística, Serviço Nacional de Recenseamento, VI Recenseamento Geral do Brasil, Censo Demográfico (1 de julho de 1950), Seleção dos Principais Dados, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1951, 1952, 1953), passim.

(1) For 1950 the populations of Amazonas and Rio Branco; Pará and Amapá; and Mato Grosso and Guaporé, have been combined to assure comparability with 1940 figures.

(2) Territory.

reduction in the proportion of blacks from 1940 to 1950, which in a number of states amounts to more than one half percentage-wise, could only be the result of a self-classification into a lighter racial group, in most cases probably the mixed category. It is possible that some of the state census supervisors for 1940 in the Northern and Northeastern states, where the discrepancies are the greatest, believing that the population should be darker than the census data revealed it to be, took it upon themselves to "adjust" the figures to coincide with their notions. At any rate the states showing the sharpest decreases in the proportion of the black population from 1940 to 1950 are located in these regions.

Inasmuch as the reproductive powers of both whites and blacks contribute to the mixed category, it might have been expected to increase, as it did in the ten-year period from 1940 to 1950. Part of this increase would seem to be the result, however, of the inclusion of persons formerly classified as black.

Contrary to expectation, the proportion in the white category actually showed a slight decrease from 1940 to 1950 (Table 15). This expectation is engendered by the process of the "whitening" of the population discussed below, by the ever increasing proportion of whites recorded in censuses previous to 1950, and by the expected tendency of self-enumeration to place a larger proportion of the population in the white category.

Decreases in the proportion of white people from 1940 to 1950 are especially sharp in the Northern and Northeastern states, where the

TABLE 15

THE POPULATION OF BRAZIL CLASSIFIED AS WHITE, BY STATES, 1940 AND 1950*

Region and State	Percent White 1940	Percent White 1950
North[1]		
Acre[2]	54.3	30.0
Amazonas	31.3	37.0
Pará	44.4	23.9
Northeast		
Maranhão	46.8	33.7
Piauí	45.2	28.0
Ceará	52.6	43.6
Rio Grande do Norte	43.5	48.8
Paraíba	53.8	67.1
Pernambuco	54.4	49.6
Alagoas	56.7	40.5
East		
Sergipe	46.7	49.6
Bahia	23.7	29.6
Minas Gerais	61.3	53.4
Espírito Santo	61.5	58.6
Rio de Janeiro	59.8	59.8
Distrito Federal	71.1	69.9

TABLE 15 continued

THE POPULATION OF BRAZIL CLASSIFIED AS WHITE, BY STATES, 1940 AND 1950*

Region and State	Percent White 1940	Percent White 1950
South		
São Paulo	84.9	85.6
Paraná	86.6	86.3
Santa Catarina	94.4	94.6
Rio Grande do Sul	88.7	89.1
West Central		
Mato Grosso	50.8	51.7
Goiás	72.1	57.9
Brazil	63.5	61.7

*Sources: 1940 data from T. Lynn Smith and Alexander Marchant, Eds., Brazil: Portrait of Half a Continent, (New York; The Dryden Press, 1951), p. 151. 1950 figures compiled and computed from data in I. B. G. E., Conselho Nacional de Estatística, Serviço Nacional de Recenseamento, VI Recenseamento Geral do Brasil, Censo Demográfico (1 de julho de 1950), Seleção dos Principais Dados, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1951, 1952, 1953), passim.
(1) For 1950 the populations of Amazonas and Rio Branco, Pará and Amapá, and Mato Grosso and Guaporé have been combined to assure comparability with 1940 figures.
(2) Territory.

mixed population is largely of Indian ancestry.

Possibly, contrary to expectation, self-enumeration resulted in a more realistic appraisal of the proportion of the population that is white, than had been the case previously, throwing a number of people into the mixed-blood category which was thus further inflated.

Another possibility is that in 1940 the census enumerator tended to classify many persons who were close to the white end of the mixed category continuum as white, thus resulting in an inflation of that category in the 1940 census.

Lastly, another effect of the changed census procedure with regard to color is seen in the greatly increased proportion of the "undeclared" in 1950.

The Racial Composition of the Brazilian Population

Because of the different procedures used for the securing of data pertaining to the racial affiliation of the Brazilian population in 1940 and 1950, comparisons between the racial composition of the nation's people in these two census years is largely meaningless. However, keeping in mind the methods used for the obtaining of this information and their limitations, the racial make-up of the population in 1950 may be examined.

Table 16 presents the distribution of the racial elements in the population for 1950. The small proportion of those who did not give any declaration of color are excluded, as is the yellow segment when it is less than 0.1 percent of the total for a given state.

Four facts stand out immediately on examination of this data:

TABLE 16

POPULATION OF BRAZIL CLASSIFIED ACCORDING TO COLOR, 1950, BY STATES*

Region and State	Percent White	Percent Mixed	Percent Black	Percent Yellow
North				
Guaporé(1)	28.5	63.0	8.1	----
Acre(1)	30.0	64.6	5.2	----
Amazonas	36.8	59.4	3.4	----
Rio Branco(1)	41.6	53.3	5.0	----
Pará	29.0	65.4	5.3	----
Amapá(1)	27.1	64.5	8.1	----
Northeast				
Maranhão	33.7	50.3	15.8	----
Piauí	28.0	59.0	12.9	----
Ceará	43.6	45.8	10.4	----
Rio Grande do Norte	48.8	41.6	9.5	----
Paraíba	67.1	19.7	13.0	----
Pernambuco	49.6	40.8	9.3	----
Alagoas	40.5	51.8	7.4	----
East				
Sergipe	49.6	36.0	14.2	----
Bahia	29.6	51.0	19.2	----
Minas Gerais	58.4	26.8	14.6	----
Espírito Santo	58.6	29.4	11.9	----
Rio de Janeiro	59.8	22.1	17.7	----
Distrito Federal	69.9	17.5	12.3	0.1

TABLE 16 continued

POPULATION OF BRAZIL CLASSIFIED ACCORDING TO COLOR, 1950, BY STATES*

Region and State	Percent White	Percent Mixed	Percent Black	Percent Yellow
South				
São Paulo	85.6	3.2	8.0	3.0
Paraná	86.3	7.3	4.3	1.9
Santa Catarina	94.6	1.5	3.6	----
Rio Grande do Sul	89.1	5.4	5.2	----
West Central				
Mato Grosso	53.3	35.9	9.8	0.7
Goiás	57.9	31.6	10.1	0.1
Brazil	61.7	26.5	11.0	0.6

*Sources: Compiled and computed from data in I. B. G. E., Conselho Nacional de Estatística, Serviço Nacional de Recenseamento, VI Recenseamento Geral do Brasil, Censo Demográfico (1 de julho de 1950), Seleção dos Principais Dados, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1951, 1952, 1953), passim.

(1) Territory

the preponderance of whites in the Southern region, the relatively large proportion of blacks in the Eastern region and four of the Northeastern states, the preponderance of mixed bloods in the Northern and Northeastern regions, and the concentration of persons of oriental ancestry in the states of São Paulo and Paraná.

Although it is possible that the four-fold census classification of racial groups into white, black, mixed, and yellow represents the best possible solution to the problem of racial classification in Brazil, it should be noted that the placing together of all and every mixture that has occurred between whites, blacks and Indians during Brazil's long history of racial miscegenation, obscures completely the role of the Indian in the present racial make-up of the population.

It may be noted however, that in considering the mixed category in the various states, the Indian strains are most important in the states comprising the Northern region, and in the interior portions of the Northeastern states of Maranhão, Piauí, Ceará, Rio Grande do Norte and Bahia, and in Mato Grosso. Negroid elements in the mixed population are probably most important in the coastal areas of the Northeastern states and of Bahia and Rio de Janeiro--and especially in areas formerly dominated by slave labor such as exist in Pernambuco, Bahia and Rio de Janeiro.[14]

The five states containing greatest proportions of whites are in decreasing order of that proportion, Santa Catarina, Rio Grande do Sul,

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[14]Cf. Smith, op. cit , pp. 157-159.

Paraná and São Paulo, (which together comprise the Southern region), and the Federal District. A like listing of states with regard to the mixed population gives us Pará, Acre, Amapá, Guaporé and Amazonas. If the territories, whose population is inconsequential are excluded, the list is Pará, Amazonas (Northern region), Piauí, Alagoas (Northeastern region), and Bahia (Eastern region).

In confirmation of popular belief, the greatest concentration of Negroes is to be found in the state of Bahia, followed by Rio de Janeiro, Maranhão, Minas Gerais, and Sergipe, in that order. All of these are in the Eastern region.

States containing proportionately the lowest number of whites, and consequently, the largest proportions of blacks and mixed-bloods, are, excluding the territories, Piauí, Pará, Bahia, Maranhão and Amazonas, listed in increasing order of the percentage of whites. In addition to the states of the Southern region where whites constitute a large proportion of the population, blacks are of little consequence in the Northern region and in Rio Grande do Norte, Pernambuco, Alagoas and Mato Grosso.

Visual study of the distribution of the races in Brazil's population in 1940 is permitted by Fig. 7. The main impression to be gained either by consideration of 1940 or 1950 data, is the importance of the white segment of the population. The widespread notion that Brazil is a land where Negroes and mixed-bloods predominate does not withstand analysis. Three of the most populous states in Brazil (Minas Gerais, São Paulo and Rio Grande do Sul), are preponderantly white. In 1940,

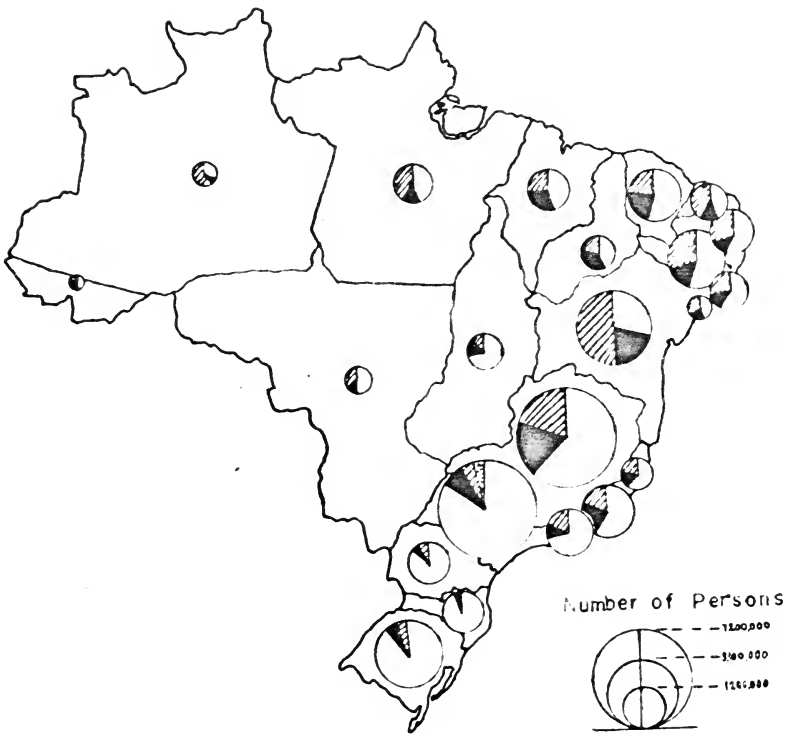

Fig. 7. Racial Distribution of the Population of Brazil, by States, 1940. (Starting at 12:00 on the circles and reading clockwise, the segments represent the white, black, mixed and yellow populations, respectively). After T. Lynn Smith, Brazil: People and Institutions, Revised Edition, (Baton Rouge: Louisiana State University Press, 1954), p. 157.

the population of all but seven states (and these contained relatively small populations) was more than fifty percent white.

Racial Differentials in Fertility: General

Interest in the question of racial differentials in the fertility of Brazil's population is of long standing. For many years it was impossible to secure data relating to this question. Due to sentimental reasons associated with the abolition of slavery, mention of race became taboo after the establishment of the republic, and the racial inquiry was omitted completely from the censuses of 1900 and 1920. In 1950, when the final results of the 1940 census appeared, it became possible for the first time since 1890 to measure the fertility of Brazil's racial groups. The principal data of the 1950 census which have not been published for all the states and territories, have made it possible to add still more to our knowledge of this subject.

Analysis of census data gives ample confirmation of the view held previously by many students of Brazil, that the black population of the nation is reproducing at a slower pace than the white.

On a national basis, the mixed population in 1950 had a slightly higher fertility ratio (69.2) than the white (65.3), the black segment a substantially lower one (55.6) than either mixed or white. Persons of oriental ancestry had a much higher fertility ratio (79.7) than those of the other racial groups.

Racial Differentials in Fertility: By States

Additional light may be thrown on racial differentials in the

rate of reproduction in Brazil, by an analysis of its variations among the nation's political subdivisions.

Table 17 presents fertility ratios for each of the color categories in the various states for 1950. It is highly significant that in no state or territory of the union is the fertility ratio of the black population higher than that of either the white or mixed segments. The highest rates of reproduction are found among the yellow population. In every state in which the number in this racial category was sufficiently large to justify the calculation of a fertility ratio, the figure obtained was higher than that for any other racial group.

Visual observation of the racial differentials in fertility as well as the relative importance of the racial groups in each state and the size of the population of each state, is permitted by Figure 8. This makes readily apparent the fact of low fertility among Negroes. Of interest is the observation that the white and mixed racial groups, with few exceptions, have about the same reproduction rates. In only four states (Maranhão, Sergipe, Rio de Janeiro, and São Paulo) in which mixed-bloods are of any consequence, are the white and mixed-bloods populations in different fertility categories. In Maranhão and Sergipe, whites have higher fertility ratios than mixed bloods, and in São Paulo and Rio de Janeiro, the reverse is true.

Since comparability between fertility ratios for the races in 1940 and 1950 is jeopardized because of the changes in the proportions in the various racial groups brought about largely by different

TABLE 17

FERTILITY RATIOS FOR THE VARIOUS COLOR CATEGORIES IN THE POPULATION, 1950, BY STATES*

Region and State	Number of children under 5 per 100 women aged 15-49			
	White	Black	Yellow	Mixed
North				
Acre(1)	90.5	58.7	-----	92.1
Amapá(1)	79.9	43.2	-----	75.7
Guaporé(1)	70.7	51.9	-----	76.9
Rio Branco(1).	82.1	62.0	-----	86.0
Amazonas	74.5	50.5	119.1	74.4
Pará	67.0	47.4	91.5	69.0
Northeast				
Maranhão	69.3	52.2	-----	65.7
Piauí	78.5	60.5	-----	77.6
Ceará	78.2	68.3	-----	77.8
Rio Grande do Norte	74.8	61.5	-----	73.9
Paraíba	72.3	60.0	-----	69.1
Pernambuco	67.3	52.0	-----	66.0
Alagoas	71.3	51.0	-----	69.2
East				
Sergipe	75.0	55.6	-----	66.4
Bahia	66.9	54.1	-----	68.9
Minas Gerais	69.7	56.2	82.1	69.3
Espírito Santo	76.5	63.0	-----	75.7
Rio de Janeiro	65.5	65.4	78.6	71.7
Distrito Federal	36.2	34.0	-----	41.5

TABLE 17 continued

FERTILITY RATIOS FOR THE VARIOUS COLOR CATEGORIES IN THE POPULATION, 1950, BY STATES*

Region and State	Number of children under 5 per 100 women aged 15-49			
	White	Black	Yellow	Mixed
South				
São Paulo	56.6	55.4	78.3	65.7
Paraná	73.4	64.5	89.4	70.1
Santa Catarina	81.2	71.5	-----	73.0
Rio Grande do Sul	66.6	58.0	-----	64.0
West Central				
Goiás	76.7	53.0	94.1	69.5
Mato Grosso	77.9	63.9	81.5	78.4
Brazil	65.3	55.6	79.7	69.2

*Source: Compiled and computed from data in I. B. G. E., Conselho Nacional de Estatística, Serviço Nacional de Recenseamento, VI Recenseamento Geral do Brasil, Censo Demográfico (1 de julho de 1950), Seleção dos Principais Dados, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1951, 1952, 1953), passim.

(1) Territory.

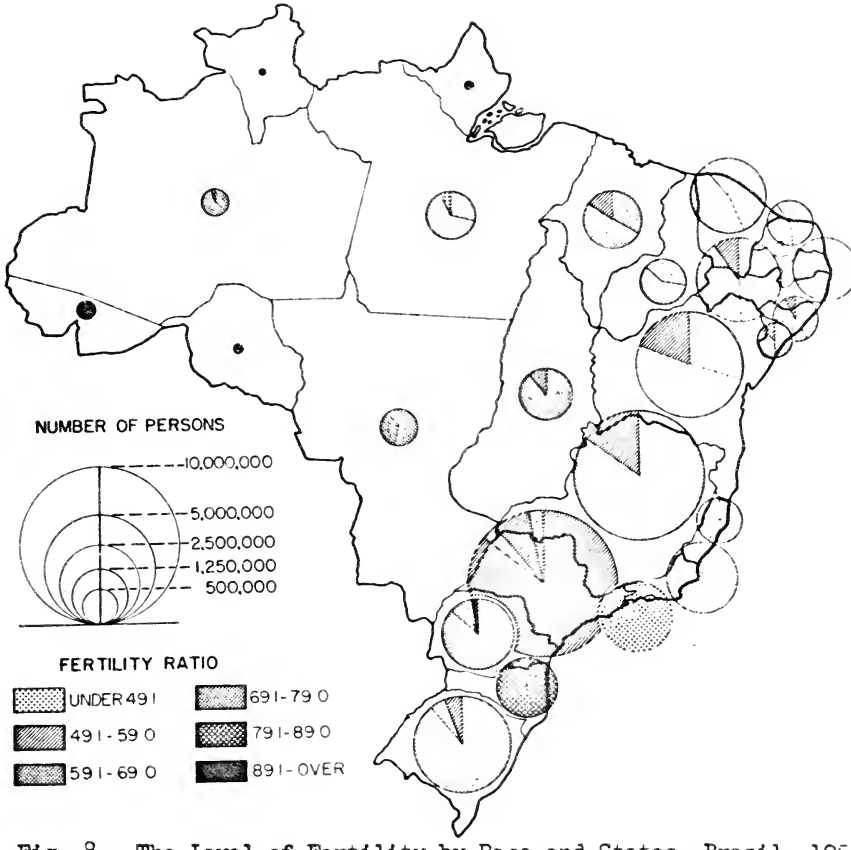

Fig. 8. The Level of Fertility by Race and States, Brazil, 1950. (Starting at 12:00 on the circles and reading clockwise, the segments represent the white, mixed, black and yellow populations, respectively). Prepared from data in I. B. G. E., Conselho Nacional de Estatística, VI Recenseamento Geral do Brasil, Censo Demográfico (1 de julho de 1950), Seleção dos Principais Dados, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1951, 1952, 1953), passim.

TABLE 18

FERTILITY RATIOS FOR THE VARIOUS COLOR CATEGORIES IN THE POPULATION, 1940, BY STATES*

Region and State	Number of children under 10 per 100 women aged 20-49			
	White	Black	Yellow	Mixed
North	149.8	128.5	160.7	163.9
Acre(1)	204.5	186.3	-----	201.5
Amazonas	160.5	149.5	173.8	176.9
Pará	142.3	116.7	144.2	154.6
Northeast	163.6	149.3	120.1	166.9
Maranhão	164.4	143.7	-----	166.2
Piauí	178.7	161.5	-----	181.6
Ceará	177.1	168.6	112.4	188.8
Rio Grande do Norte	157.7	139.2	-----	165.4
Paraíba	165.3	150.7	-----	169.5
Pernambuco	151.5	131.8	-----	151.7
Alagoas	162.3	136.4	-----	164.9
East	153.7	141.5	133.6	161.7
Sergipe	155.9	131.9	-----	159.9
Bahia	153.4	134.3	83.1	162.2
Minas Gerais	172.4	151.3	185.5	173.2
Espírito Santo	193.5	167.0	-----	192.4
Rio de Janeiro	169.1	164.2	146.2	174.8
Distrito Federal	86.7	75.7	92.2	99.2

TABLE 18 continued

FERTILITY RATIOS FOR THE VARIOUS COLOR CATEGORIES IN THE POPULATION, 1940, BY STATES*

Region and State	Number of children under 10 per 100 women aged 20-49			
	White	Black	Yellow	Mixed
South	157.4	136.7	187.3	152.5
São Paulo	145.8	130.2	186.7	151.8
Paraná	174.9	149.7	198.7	162.9
Santa Catarina	192.2	169.3	-----	165.9
Rio Grande do Sul	163.6	141.8	172.9	147.8
West Central	183.8	141.8	220.0	171.7
Goiáz	184.3	140.5	232.2	168.8
Mato Grosso	182.2	147.3	218.5	173.3
Nation	158.0	143.0	187.0	163.3

*Source: Compiled and computed from data in I. B. G. E., Recenseamento Geral do Brasil (1 de Setembro de 1940), Censo Demográfico, População e Habitação, Serie Regional, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1950, 1952), passim.
(1) Territory.

techniques of enumeration in 1940 and 1950, no attempt will be made to discern trends in the rate of reproduction of the races.

It is possible however, from examination of the data presented in Table 18 to note that the same differentials observed in 1950 were in existence in 1940.[15]

It would indeed appear that the racial differentials in the speed of reproduction observed in 1940 and 1950 are of very long standing. The results of a special tabulation of the 1890 census for the city of Rio de Janeiro are presented by Smith and appear in Table 19 in reduced form.

TABLE 19

FERTILITY IN RELATION TO RACE, RIO DE JANEIRO, 1890*

Race and Sex of Parents		Average number of children per couple
Males	Females	
White	White	3.53
Negro	Negro	2.99
Caboclo	Cabocla	3.96
Mestiço	Mestiça	3.31

*Source: T. Lynn Smith, Brazil: People and Institutions, Revised Edition, (Baton Rouge: Louisiana State University Press, 1954), p. 196.

Here again the Negro is seen to reproduce at a much slower pace than

[15]Because of the manner of presentation of the data, it was necessary to use children 0-9 and women 20-49 as a basis for the calculation of the fertility ratio.

either whites or the two mixed-blood groups. Smith also presents data for 1821:

> The German ecologist Eschwege collected vital statistics for the province of Minas Gerais in 1821, long before the abolition of slavery, the destruction of the records, and popular sensitiveness about color or racial classifications. Among the data he assembled are some which expressed in terms of the conventional birth rates, show the following racial differences among the free population: whites, 40; mulattoes (slave), 33; Negroes (free), 48; Negroes (slave), 29. These rates are all within reasonable expectations. If one makes allowances for the well known tendency for colored women to secure their freedom in larger proportions than colored men, and keeps in mind the fact that the free colored population was relatively small at this time, these data seem to show that the fertility rate increases as we pass from the Negro, to the mulatto, to the white racial categories.[16]

Racial Differentials in Fertility: By Residence

In any discussion of racial differentials in the rate of reproduction, the possibility is always present that the differences are merely apparent and not real, and that the lower fertility of a given racial group may be due to the concentration of its members in urban areas, whereas the higher fertility of another racial group may result from the largely rural residence of its components.

Such was the conclusion arrived at by Beegle and Smith in their study of differential fertility:

> In the state as a whole Negroes seem to be multiplying slightly more rapidly than the white population, but this appears to be due to the fact that a higher proportion of the colored population resides amid rural surroundings. To the extent that we have been able to correct for these

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[16]Smith, op. cit., pp. 193-95.

> environmental differences and compare similar residential areas, the racial differences have tended to disappear.[17]

In this section the influence of the residential factor on the rate of reproduction of the various racial groups will be analyzed.

Contrary to the findings reported by Beegle and Smith in the United States, there appears to be a true racial differential in fertility in Brazil.

Examination of Table 20 which presents fertility ratios by residence and race for 1950,[18] reveals two important facts: fertility is lower in the capital municipio than in the remainder of the state, and of greater significance to the present discussion, the rate of reproduction of the black segment of the population is substantially lower than that of either whites or mixed-bloods in both the urban and rural portions of the states as measured by the capital municipio-remainder of state dichotomy.

A more careful scrutiny of this tabulation reveals that blacks failed to reproduce as rapidly as whites or mixed-bloods in all of the states and territories, in both rural and urban areas, with the minor and unimportant exception of the rural portion of Santa Catarina

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[17] J. Allan Beegle and T. Lynn Smith, Differential Fertility in Louisiana, Louisiana State University Agricultural Experiment Station, Louisiana Bulletin No. 403, June, 1946, p. 27.

[18] In calculating fertility ratios by residence and race for Brazil, it becomes necessary once again to resort to the capital municipio-remainder of state device in order to arrive at an approximation of the rural and urban segments of the population. The Brazilian census has not as yet sub-sorted age and sex data for the races, by residence.

TABLE 20*

FERTILITY RATIOS (1) BY RESIDENCE AND RACE, BRAZIL 1950, BY STATES

Region and State	Municipio containing the capital				Remainder of the state			
	White	Black	Yellow	Mixed	White	Black	Yellow	Mixed
North								
Acre(2)	84.2	47.2	----	78.3	93.5	63.4	-----	96.1
Amapá(2)	75.4	45.3	----	71.7	80.7	39.1	-----	81.1
Guapore(2)	69.8	48.8	----	76.0	73.7	59.9	-----	79.3
Rio Branco(2)	81.4	64.9	----	87.5	96.4	----	-----	51.6
Amazonas	59.7	26.3	----	56.4	84.3	56.7	108.2	80.7
Pará	50.7	25.9	----	50.7	77.0	54.7	100.0	74.0
Northeast								
Maranhão	44.3	31.8	----	47.9	71.9	54.0	-----	67.6
Piauí	57.8	40.9	----	62.6	80.7	62.5	-----	79.4
Ceará	53.5	31.0	----	53.6	81.7	70.8	-----	81.6
R. G. do Norte	56.8	35.5	----	49.5	77.6	65.0	-----	77.7
Paraíba	48.2	34.6	----	54.9	73.8	62.3	-----	71.9
Pernambuco	48.3	32.8	----	48.5	71.6	56.7	-----	70.0
Alagoas	44.9	27.0	----	45.2	76.1	54.0	-----	72.6
East								
Sergipe	51.5	37.2	----	46.7	78.4	60.0	-----	70.8
Bahia	42.1	36.7	----	46.3	70.3	56.9	-----	71.0
Minas Gerais	47.2	35.8	----	47.7	71.1	57.4	80.7	70.5
Espírito Santo	43.2	32.2	----	50.3	79.6	64.3	-----	78.2
Rio de Janeiro	40.3	42.6	----	49.4	68.7	41.0	80.5	73.5
Distrito Federal	36.2	34.0	56.7	41.3	----	----	-----	----
South								
São Paulo	37.1	36.9	63.4	43.2	64.4	63.2	81.0	72.7
Parana	39.7	29.2	49.7	38.5	77.8	66.4	90.1	72.1
Santa Catarina	56.4	47.3	----	51.2	82.5	74.4	-----	74.4
R. G. do Sul.	36.8	36.3	----	39.7	70.4	62.5	-----	68.2
West Central								
Goiás	55.6	36.2	----	67.1	77.9	53.6	-----	69.6
Mato Grosso	60.7	50.7	----	68.8	79.0	66.3	81.7	80.7

*Source: Compiled and computed from data in I. B. G. E. Conselho Nacional de Estatística, Serviço Nacional de Recenseamento, VI Recenseamento Geral do Brasil, Censo Demográfico (1 de julho de 1950) Seleção dos Principais Dados, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1951, 1952, 1953), passim.

(1) Fertility ratio determined as follows: $\frac{\text{children under 5}}{\text{women 15-49}} \times 100$

(2) Territory

in which the fertility ratio obtained for both blacks and mixed-bloods was the same (74.4), but even so considerably below that of the white population of the rural areas of the state (82.5).

It should be noted as well, that in those states possessing a sufficient number of persons of oriental ancestry to justify the calculation of a fertility ratio for this racial group, the yellow category possessed higher fertility than either whites, mixed bloods or Negroes, in both the urban and rural portions of all of these states. It is especially significant that in São Paulo and Paraná, the two states containing the bulk (96.1 percent) of the yellow population, the high level of the rate of reproduction of this group holds true in both urban and rural areas.

In view of these facts, it seems safe to assert that true racial differentials in fertility exist in Brazil, with the yellow inhabitants reproducing most rapidly, the black at the slowest pace, with whites and mixed-bloods occupying an approximately equal intermediate position.

The data presented also reveal that none of the racial groups is immune to the depressing effect of urban conditions on the birth rate. With the exception of the black population in Amapá and Rio de Janeiro, the urban fertility ratio is lower than the rural fertility ratio for each of the races in all of the states and territories. No significance should be attached to the exceptions mentioned. The differences are small, and probably are the result of the somewhat imperfect rural-urban classification that it is necessary to use in this analysis. In Amapá, the smallness of the population and its

concentration in the capital municipio are very likely responsible as well.

In view of the changes brought about in the proportions of the various racial elements present in the population, by different 1950 census procedures, it would be well to examine racial differentials in fertility by residence for 1940. The fertility ratios for racial groups by residence (necessarily calculated on the basis of children under 10 and women 20 to 49), are presented in Table 21. This tabulation reveals nothing that is new and corroborates the conclusions reached above.

The "Bleaching" of the Population

The belief has long been prevalent among students of Brazil's population that a process of "whitening" (branqueamento) or bleaching of the population has been going on literally since the first Portuguese set foot on the nation's soil. The pigments of various colors that have been introduced into the melting pot have been stirred together by processes that tend to result in the reduction of the importance of the darker coloring and in an increase in the importance of the lighter hues.

Three factors have been important in the accomplishment of this result; the influx of several million white European immigrants, extensive racial miscegenation, and the lower rate of reproduction of the dark portion of the population. The extent to which bleaching has occurred may be seen from Table 22. The importance of the white segment of the population nearly doubled from 1872 to 1950, that of

TABLE 21*

FERTILITY RATIOS (1) BY RESIDENCE AND RACE, BRAZIL, 1940, BY STATES

Region and State	Municipio containing the capital				Remainder of the state			
	White	Black	Yellow	Mixed	White	Black	Yellow	Mixed
North								
Acre(2)	168.7	129.6	-----	164.5	213.4	194.3	-----	216.0
Amazonas	115.4	71.4	-----	132.2	181.9	159.0	-----	193.6
Pará	105.8	73.0	-----	110.6	157.0	127.1	177.6	167.4
Northeast								
Maranhão	104.7	86.9	-----	95.6	199.1	149.1	-----	171.4
Piauí	132.4	130.0	-----	117.3	183.8	165.5	-----	185.7
Ceara	115.2	93.7	-----	108.9	184.9	168.4	127.0	201.5
R. G. do Norte	91.6	67.1	-----	108.5	163.5	145.1	-----	172.4
Paraíba	103.8	96.1	-----	123.3	170.5	157.6	-----	173.2
Pernambuco	88.1	70.8	-----	90.9	162.6	144.3	-----	165.8
Alagoas	92.0	72.4	-----	82.1	171.3	146.3	-----	175.2
East								
Sergipe	90.6	81.1	-----	93.5	166.3	142.1	-----	168.3
Bahia	86.2	74.9	-----	95.4	161.9	144.1	93.1	167.5
Minas Gerais	100.7	79.1	-----	104.7	175.2	153.9	203.2	177.2
Espírito Santo	118.5	102.1	-----	139.0	202.1	171.9	-----	197.9
Rio de Janeiro	102.3	97.0	-----	119.9	166.3	168.2	151.1	179.8
Distrito Federal	86.7	75.7	92.2	99.2	-----	-----	-----	-----
South								
São Paulo	85.8	68.9	139.5	80.8	164.9	142.6	190.3	168.2
Paraná	104.3	74.9	-----	97.4	187.2	155.7	199.0	169.3
Santa Catarina	120.2	102.9	-----	----	195.7	176.2	-----	168.4
R. G. do Sul	83.5	79.8	-----	85.3	172.6	150.0	181.5	161.8
West Central								
Goiás	171.4	106.2	-----	197.8	185.3	141.9	-----	168.4
Mato Grosso	128.3	134.6	-----	157.7	185.3	149.9	219.1	178.1

*Source: Compiled and computed from data in I.B. G.E., Recenseamento Geral do Brasil (1 de setembro de 1940), Censo Demográfico, População e Habitação, Serie Regional, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1950, 1952), passim.

(1) Fertility ratio determined as follows:

$$\frac{\text{children under 10}}{\text{women 20-49}} \times 100$$

(2) Territory

TABLE 22

PERCENTAGES IN THE RACIAL GROUPS, BRAZIL, 1872, 1900, 1940 AND 1950*

Color	1872	1900	1940	1950
White	38.14	43.97	63.47	61.66
Black	19.68	14.63	14.64	10.96
Yellow	-- --	-- --	0.59	0.63
Mixed	42.18	41.40	21.20	26.54

*Source: I. B. G. E., Conselho Nacional de Estatística, VI Recenseamento Geral do Brasil, Censo Demográfico (1 de Junho de 1950), Estados Unidos do Brasil, Seleção dos Principais Dados, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1953), p. 1

the mixed segment was nearly halved, and the proportion of the black inhabitants showed a considerable decrease.

The influence of white immigration on the bleaching of the population is fairly obvious. The mere introduction of a large number of light skinned people raises the proportions in the white category, and any mating that may occur between them and darker elements of the population can only result in a lightening of the skin of offspring. Thus it is not difficult to explain the preponderance of white people in the southern states of Brazil, to which the lion's share of European immigration has been directed.

A number of important factors involved in racial miscegenation that tend to contribute to the bleaching of the population may be mentioned. One of these is the preference for mates of a lighter color that dark-skinned men exhibit. Since the woman is in an inferior bargaining position, the man within certain limits prescribed by the

society usually has his way.[19]

> There is unanimity of points of view in Brazil in considering inter-marriage as extensive, and in the preferential choice by the man of a woman of lighter color, thus resulting in a progressive "bleaching" of the population.[20]

Another important factor involved in racial miscegenation that contributes toward bleaching the population is mentioned by Smith:

> Upper class (white) men continue to have access to women of the lower (darker) class. Thus in addition to having more than their share of legitimate descendants, these men also contribute greatly to the increase, and consequently to the bleaching of the lower classes. Neither the sex mores of Brazilian society nor the position of women in the upper class family is sufficient to check the extra-marital proclivities of the upper class men.[21]

In Brazil socio-economic status and color of skin are associated to a large extent, the lighter the color the higher the socio-economic status of the individual is likely to be. The upper classes are the whitest and rare is the occasion when a person of upper class status contracts marriage with someone of marked Negro ancestry. The more numerous legitimate offspring of the upper-classes no doubt survive to adulthood in greater numbers. Thus the white element of the population contributes to the racial composition of the population out of proportion to its numbers.[22]

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[19]The reader who is interested in the sociological aspects of inter-racial marriage in Brazil is referred to Rene Ribeiro, "Situação Étnica no Nordeste," Sociologia, Vol. XV, No. 3 (agosto de 1953), pp. 210-22.

[20]Ibid., p. 211.

[21]Op. Cit., pp. 160-61.

[22]Ibid., p. 160.

Finally, the slow rate at which the Negro reproduces is a powerful force making for the bleaching of the population. In connection with the question of low Negro fertility a hypothesis regarding the rate of reproduction of the various races will be examined here.

Inasmuch as the fertility ratio for the races is obtained by relating the number of children 0-4 classified as of a given color, to women 15-49 in the same color category, the following assumption may be pertinent: in the case of blacks only the children of unions in which both parents are black are likely to be classified as black--where one parent is of a lighter color, thus resulting in children that are not completely Negroid, those children may often be classified as mixed-bloods. Thus the black category is likely to suffer a loss of children as the result of inter-racial unions; this would result in a lowered fertility ratio for blacks. Consequently, the mixed-blood group gains a number of children from this process, thus resulting in increased mixed fertility ratios. When unions occur between members of the mixed and white populations, it may be that the children will be classified as white, increasing the number of white children and raising the white fertility ratio. On the other hand, the white category is likely to lose children to the mixed category when unions occur between whites and Negroes or between whites and mixed-bloods who are close to the dark end of the mixed-blood continuum. Very little inter-marriage occurs between the yellow group and other racial groups in the population. Therefore, almost all if not all children resulting from unions in which one of the

mates is yellow are likely to be classified as yellow. Thus practically no transference of children of one yellow parent to a different racial category occurs, inasmuch as the other parent is with few exceptions yellow as well, thus giving the yellow group a high fertility ratio.

These considerations point to the possibility that were accurate birth rates available for the racial groups, these would show few significant differences. This might lead one to the conclusion that the observed differentials in fertility are largely due to the transference of children from one racial category to another in the case of blacks, mixed-bloods and whites, and to the lack of transference in the case of the population of oriental ancestry.

This hypothesis may be tentatively tested by the use of materials presented in the 1940 census, which give the number of women 12 and over subdivided by age groups in each racial category, and the number of live births and of still births reported by these women. This makes it possible to compute the number of live births, of still births, or of total births per 100 women in a given race and age category, thus:

$$\frac{\text{number of white women 20-59}}{\text{number of live births reported}} \times 100$$

As will be seen in a subsequent chapter, this measure is not an accutate or satisfactory indicator of fertility, and too much reliance cannot be placed upon it. It is of interest however, to examine the

results obtained for what they may be worth.[23]

Live births per 100 women aged 20-59 for the races in 1940 were computed. Women 12 to 19 were excluded because of the very small number of live births reported by them, and women 60 and over were excluded because the data indicate that women in these ages possessed exceptionally faulty memories with regard to the number of children they had brought into the world. The results are as follows:

	White	Yellow	Black	Mixed
Live births per 100 women 20-59	374.7	374.6	350.0	377.4

Not surprisingly, the fertility of whites, mixed-bloods and yellow persons is almost exactly the same as recorded by this measure, and to the doubtful extent to which it is reliable, the data partially support the hypothesis set forth. The fertility of Negroes, as measured in this manner, is considerably below that of the other racial groups. It is indeed so low that error in the data, introduced by forgetfulness of the number of children born seems unlikely to explain the difference.

Several attempts at explanation were made.[24] The possibility

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[23]The figures presented in the following pages were all compiled and computed from data in I. B. G. E., Recenseamento Geral do Brasil (1 de setembro de 1940), Censo Demografico, Populacao e Habitacao, Serie Nacional, Vol. 11, (Rio de Janeiro: Servico Grafico do I. B. G. E., 1950), passim.

[24]The writer wishes to make it clear that the following discussion, in which an attempt is made to explain the low fertility of Negroes, is in no way intended to support the hypothesis of equal birth rates of the racial groups. On the contrary, the data seems to suggest that the birth rate of Negroes is lower than that of the other races.

of a much higher proportion of still births among Negroes, who make up the lower and less privileged stratum of society was investigated. Although Negroes were found to have a high proportion of still births (always as reported by the enumerated persons), this difference was not sufficient to account for the much lower fertility of Negroes

	White	Yellow	Black	Mixed
Still births as a percent of total births of women 20-59	7.1	4.6	8.4	8.2
Total births per 100 women 20-59	403.4	387.8	382.2	411.1

Another possibility investigated, was that Negro women probably experiencing higher death rates, were under-represented especially in the more advanced age groups. This tabulation also threw no light upon the question of the low fertility of Negroes. The possibility of low sex ratios for Negroes in the 20-59 age group also threw no light on the question.

The fourth and most fruitful possibility investigated was that of a disadvantage in mating suffered by black women. It has already been pointed out that women in this racial category are considered to be the least desirable mates. Therefore, the proportion of women aged 20 to 59 in the various racial groups, reporting live births was calculated. Black women reported fewer live births than white, yellow, or mixed-blood women.

	White	Yellow	Black	Mixed
Percent of women 20-59 reporting live births	72.9	81.7	68.5	71.9

This measure is of particular interest, since the respondents can

be expected to be more accurate in their reply to the question of whether or not they had live births, than to the question of how many. It is probable that the lower percentage of black women reporting live births is a reflection of a handicap in mating, which results in lower fertility.

Unfortunately, census data do not permit the final test of this assumption to be made--the calculation of proportions married in the various color groups. It may be however, that were such a tabulation possible, the disadvantage suffered by black women in mating would be patent. It is also possible that the low fertility ratio of Negroes is in part a reflection of higher mortality among Negro children aged 0 to 4. Here again, the data necessary to test this assumption are not available.

CHAPTER VI

REGIONAL DIFFERENTIALS IN FERTILITY

The factors that affect the rate of reproduction of a population are many and varied. Differences in the fertility of Brazil's various residential and color categories have been examined. In this chapter, differences in the rate of reproduction that are peculiar to certain areas of the nation's territory, are investigated.

Table 23 permits the examination of the fertility ratios for the total population of the states and territories, for 1950.

The rate of reproduction as measured by the fertility ratio is highest in the territory of Amapá, where there were an astounding 90 children under 5 per 100 women 15-49. Other states and territories whose populations are reproducing at a very rapid rate are Rio Branco, with a fertility ratio of 83.6, Santa Catarina (80.5), Ceará (77.0), Matto Grosso (76.7) and Piauí (75.9).

The lowest rates of reproduction were those for the Federal District, with a fertility ratio of only 27.2, and of São Paulo, where there were only 57.4 children under 5 per 100 women 15-49.

These differences in the rate of reproduction are in large measure the result of different degrees of urbanity and industrialization. The high fertility areas are among the most rural and under-developed portions of the nation's territory, whereas in the areas where the rate of reproduction is lowest, urban and industrial development is greatest.

Other than the differences which are produced because one area is more rural or more urban than another, a regional differential

TABLE 23

FERTILITY RATIOS BY STATES, BRAZIL, 1950*

Region and State	Number of children 0-4 per 100 women 15-49
North	
Acre (1)	90.0
Amapá (1)	73.5
Guaporé (1)	73.0
Rio Branco (1)	83.6
Amazonas	73.7
Pará	67.2
Northeast	
Maranhão	64.6
Piauí	75.9
Ceará	77.0
R. G. do Norte	73.2
Paraíba	70.0
Pernambuco	65.2
Alagoas	63.6
East	
Sergipe	69.2
Bahia	65.4
Minas Gerais	67.5
Espírito Santo	74.5
Rio de Janeiro	66.9
Distrito Federal	27.2
South	
São Paulo	57.4
Paraná	72.9
Santa Catarina	80.5
R. G. do Sul	66.0
West Central	
Goiás	72.0
Mato Grosso	76.7
Brazil	65.3

*Source: Compiled and computed from data in I. B. G. E. Conselho Nacional de Estatistica, Serviço Nacional de Recenseamento, VI Recenseamento Geral do Brasil, Censo Demografico (1 de julho de 1950) Seleção dos Principais Dados, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1951, 1952, 1953), passim.
(1) Territory

in fertility may be thought to exist when the area in question exhibits fertility ratios for the racial and residential categories that are consistently higher or lower than the national fertility ratios for the racial and residential categories. The cause of such a differential must be found in factors which are peculiar to the region.

An examination of the fertility ratios for the various color and residential categories of the population, for the census regions in 1950 as compared with those for the nation is permitted by Table 24.

If the census' division of the nation into regions is considered, only one area of the nation (the West Central region) is found to be consistent in the different rate at which its racial and residential categories reproduce, as compared with those of the nation. In the West Central region, fertility ratios for all of the racial and residential categories are higher than those for the nation.

If the yellow population, which amounts to only a small proportion of the total, is disregarded in the Eastern region, then this census region is found to have consistently low fertility ratios.

A more careful scrutiny of regional differentials in fertility is made possible, if the fertility ratios of each of the states and territories for the color and residential categories, are compared with the national fertility ratios for the color and residential categories, with the national figure being equated to 100, thus:

$$\frac{\text{fertility ratio for white population of state}}{\text{fertility ratio for white population of nation}} \times 100.$$

In this manner an index number is obtained. If the state figure is larger than the national figure, the resulting index number will be

TABLE 24

FERTILITY RATIOS FOR THE VARIOUS COLOR AND RESIDENTIAL CATEGORIES IN THE POPULATION, 1950, BY REGIONS*

Region	White	Black	Yellow	Mixed	Urban	Suburban	Rural
North	71.0	43.7	101.1	72.1	43.8	63.0	79.2
Northeast	72.1	57.5	--- -	71.0	43.1	57.6	77.3
East	62.7	54.0	80.2	67.1	42.9	58.2	75.4
South	63.3	57.4	79.6	66.3	40.5	59.7	80.1
West Central	77.0	56.0	84.4	72.3	54.4	68.2	79.2
Brazil	65.3	55.6	79.7	69.2	43.2	58.9	77.8

*Source: Compiled and computed from data in I. B. G. E., Conselho Nacional de Estatística, Serviço Nacional de Recenseamento, VI Recenseamento Geral do Brasil, Censo Demográfico (1 de julho de 1950), Seleção dos Principais Dados, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1951, 1952, 1953), passim.

greater than 100, and if the state figure is smaller than the national figure, the index number will be smaller than 100. When such index numbers for all the residential and color categories for each of the states and territories are presented in tabular form, it becomes possible to tell at a glance whether the fertility ratio in a given state or territory for a specified color or residential category, is smaller or larger than the national figure for that category. The results of these computations are presented in Table 25.

Examination of Table 25 reveals that the rate of reproduction as measured by the fertility ratio is consistently high or low in several of the nation's areas. Consistently high fertility ratios

TABLE 25

A COMPARISON OF THE MAGNITUDE OF THE FERTILITY RATIOS FOR THE COLOR AND RESIDENTIAL CATEGORIES OF THE STATES AND REGIONS, WITH THE MAGNITUDE OF THE FERTILITY RATIOS FOR THE COLOR AND RESIDENTIAL CATEGORIES OF THE NATION AS A WHOLE, 1950. BRAZIL = 100*

Region and State	Index Numbers						
	White	Black	Yellow	Mixed	Urban	Suburban	Rural
Brazil	100.0	100.0	100.0	100.0	100.0	100.0	100.0
North	103.7	87.6	126.9	104.2	113.0	107.0	101.8
Acre (1)	138.6	105.6	---	133.1	152.5	139.2	122.8
Amapá (1)	122.4	77.7	---	109.4	147.7	125.8	98.2
Guaporé (1)	103.3	93.3	---	111.1	140.7	130.9	98.3
Rio Branco (1)	125.7	111.5	---	124.3	157.9	147.5	115.9
Amazonas	114.1	90.8	149.3	107.5	113.1	112.4	104.2
Pará	102.6	85.3	107.3	99.7	104.6	103.2	98.1
Northeast	110.4	103.8	---	102.6	111.3	97.8	100.0
Maranhão	106.1	93.9	---	94.4	105.6	95.2	88.0
Piauí	120.2	108.8	---	112.1	110.4	106.5	103.7
Ceará	119.8	122.8	---	112.4	121.5	105.9	109.3
R. G. do Norte	114.5	110.6	---	106.8	121.3	103.5	104.0
Paraíba	110.7	107.9	---	99.9	116.2	101.9	99.9
Pernambuco	103.1	93.5	---	95.4	102.8	93.2	96.7
Alagoas	109.2	91.7	---	100.0	105.3	88.5	99.7
East	96.0	97.1	100.6	97.0	99.3	98.8	96.9
Sergipe	114.9	100.0	---	96.0	110.9	105.3	101.7
Bahia	102.5	97.3	---	99.6	105.3	96.9	93.7
Minas Gerais	106.7	101.1	103.0	100.1	114.6	97.6	96.8
Espírito Santo	117.2	113.3	---	109.4	115.5	103.1	105.3
Rio de Janeiro	100.3	117.6	98.6	103.6	122.5	120.0	102.3
Distrito Federal	55.4	61.2	---	60.0	72.2	94.1	88.6

TABLE 25 continued

A COMPARISON OF THE MAGNITUDE OF THE FERTILITY RATIOS FOR THE COLOR AND RESIDENTIAL CATEGORIES OF THE STATES AND REGIONS, WITH THE MAGNITUDE OF THE FERTILITY RATIOS FOR THE COLOR AND RESIDENTIAL CATEGORIES OF THE NATION AS A WHOLE, 1950. BRAZIL = 100*

Region and State	Index Numbers						
	White	Black	Yellow	Mixed	Urban	Suburban	Rural
South	96.9	103.2	99.9	95.8	93.8	101.4	103.0
São Paulo	86.7	99.6	93.2	94.9	89.4	93.0	100.4
Paraná	112.4	116.0	112.2	101.3	112.5	106.1	104.4
Santa Catarina	124.4	123.6	---	105.5	123.0	123.3	113.4
R. G. do Sul	102.0	104.3	---	92.5	94.4	104.6	101.5
West Central	117.9	100.7	105.9	104.5	125.9	115.8	101.8
Goiás	117.5	95.3	113.1	100.4	125.0	106.5	93.7
Mato Grosso	119.3	114.9	102.3	113.3	127.8	123.0	111.3

*Source: Compiled and computed from data in I. B. G. E. Conselho Nacional de Estatística, Serviço Nacional de Recenseamento, VI Recenseamento Geral do Brasil, Censo Demográfico (1 de julho de 1950) Seleção dos Principais Dados, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1951, 1952, 1953), passim.

(1) Territory

are to be found in ten states. Three of these (Acre, Rio Branco, and Mato Grosso), are among the most remote frontier areas of the nation, are highly rural, and are dependent almost completely on an economy based on fire agriculture, hunting, gathering and fishing, and rudimentary forms of animal husbandry.

Three states that have fertility ratios that are consistently higher than those of the nation (Ceará, Rio Grande do Norte and Piauí), are located on the northeastern coast of Brazil, and are among the most rural and least industrialized subdivisions of the nation's territory. The coastal regions of these states are mainly devoted to rudimentary forms of agriculture, and contain large numbers of fishermen who wrest a living from the sea by century-old methods, with the aid of home-made balsa rafts or jangadas. The interior sertões of these states are largely devoted to a primitive grazing economy.

The four remaining states presenting consistently high fertility ratios (Espírito Santo, Rio de Janeiro[1], Paraná, and Santa Catarina), are characterized by sizable proportions of European immigrants, and a relatively small degree of urbanization or industrialization. In these states, and in Paraná and Santa Catarina especially, the European peasant culture of a hundred years ago has been preserved and

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[1]The yellow category in Rio de Janeiro possesses a slightly lower fertility ratio than the yellow category for the nation. Because of the exceedingly small number of persons of oriental ancestry in this state, this difference is considered of little or no significance.

diffused to a marked degree. In Paraná, persons of Polish and Slavic peasant origin constitute a large portion of the rural population. In Espírito Santo, Rio de Janeiro, and Santa Catarina, German peasant stocks have contributed greatly to the settlement of the land. With them they have brought from Europe many culture traits typical of the European peasant. The strong resemblance between many areas of Santa Catarina for example, and rural districts of Bavaria, is far more than coincidental. Among the culture traits of the German and Polish peasant which have been perpetuated and diffused in these areas, are those that make for a high level of reproduction.

Consistently low fertility ratios are to be found in the nation's most highly urbanized and industrialized areas--the Federal District, and São Paulo.[2]

The Federal District, a small area almost entirely occupied by the national capital, is by far the most urbanized of the political subdivisions of the nation. São Paulo, is the most urbanized of the states (excluding the Federal District), and by far the most industrialized. It is in these areas that the pressures of an urban-industrial mode of life which tend to reduce the rate of reproduction, are brought to bear most strongly.

It is also worthy of note that the West Central census region as a whole, which consists of two of the most remote and rural states in

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[2]The very slightly higher fertility ratio for the rural category in São Paulo, as compared with the fertility ratio of the rural portion of the nation (index number 100.4), is considered of little or no significance.

Brazil (Goiás and Mato Grosso), yielded index numbers that reveal that fertility within its borders as measured by the fertility ratio is consistently higher than the fertility ratios obtained for the nation.

The yellow population of the Eastern region constitutes only a small proportion of the total population of that census region, and had a fertility ratio only slightly higher than that for the yellow population of the nation as a whole (index number 100.6). If the yellow population is disregarded, then the Eastern region which contains the greatest urban concentration of the nation, in addition to some of its largest cities, is revealed to have lower fertility ratios in all racial and residential categories than the nation as a whole.

Finally, those states and census regions which come close to being consistent with regard to the level of the fertility ratio as compared with the nation (i.e., have fertility ratios for the racial and residential categories that are either higher or lower than the national figure with one sizable exception), may be examined.

Amapá, Amazonas and Sergipe belong to this group, along with the Northern and Northeastern census regions. All of these states and regions are found to have, with the one exception, fertility ratios for the racial and residential categories that are higher than those for the nation. They also are found to conform to the situation of the high fertility states that possessed consistently high fertility ratios. Amapá and Amazonas are among Brazil's most remote frontier regions. Sergipe is in the northeastern coastal area. The Northern and Northeastern census region, in addition to containing the states just mentioned, also are the location of five of the ten states that

fell into the high fertility group.

In conclusion, it is evident that high fertility for all the racial and residential categories occurs (1) in the remote frontier sections of the country, (2) in the highly rural and under-developed northeastern states, and (3) in states in which European immigrants have diffused culture traits conducive to high fertility. Low fertility in all the racial and residential categories is found in the nation's most urban and industrialized areas.

CHAPTER VII

NATIVITY, OCCUPATIONAL, RELIGIOUS, AND SOCIO-ECONOMIC DIFFERENTIALS IN FERTILITY

The level of the rate of reproduction has been known to vary among different nativity, occupational, and religious groups, and among socio-economic classes. In this chapter, differentials in the fertility of these various groups of people, in Brazil, will be studied.

It will be well before proceeding into the body of the analysis to turn our attention to a great mass of data pertaining to the fertility of the Brazilian population, that was gathered, and presented in the 1940 census. These data were secured through the following questions asked of the female population 12 years of age and over, and of the male population 20 years of age and over:

> If you had children born alive, state how many.
> If you had children born dead, state how many.
> Age on the date of the birth of the first child.
> Number of children living on the date of the census.[1]

The data thus obtained, were presented in great detail, for the nation as a whole, and for all of its political subdivisions, in the 1940 census.

These data appear in the census volumes, in tables that give the number of women 12 and over, the number of women 12 and over reporting live births, and the number of live births and of still births reported

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[1] I. B. G. E., Recenseamento Geral do Brasil (1 de setembro de 1940), Censo Demográfico, População e Habitação, Serie Nacional, Vol. II, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1950), p. xxiii.

by these women. These data are also presented subdivided by age groups; color categories; marital status: nationality of the foreign born: age and number of children of the respondent; age at the time of the first birth; and by states and regions. For males 20-79, the data are presented sub-sorted by age groups for occupational categories.

The writer believes that it is very unfortunate that the great amount of time, expense, effort and space required for these tabulations (not to mention the many detailed analyses that have been made of them), were used in this manner. It would have been far better for example, to have presented instead those essential tabulations that should constitute the warp and woof of a well organized census, namely, age and sex data sub-sorted by residence and race.

It is the writer's purpose to demonstrate the unreliability of these materials, thus explaining his rejection of their use, especially with regard to nativity and occupational differentials in fertility. Were the data worthy of confidence, an insight could be gained into those two areas of differential fertility that can only be scratched at the surface otherwise--nativity and occupational differentials.

Inasmuch as the fertility ratio is a satisfactory and widely accepted measure of the rate of reproduction, a comparison between the rates obtained from calculations of the number of live births per 100 women 12 and over, with the fertility ratio (or the number of children under 5 per 100 women 15-49) will make possible an evaluation of the reliability of the former measure of fertility.

If the data pertaining to the number of live children brought into the world by women 12 years of age and over represents a fairly satsifactory measure of the fertility of the population, then the magnitude of state and regional variations in the number of live births per 100 women 12 and over as compared with the national figure, should be approximately the same as the state and regional variations in the magnitude of the fertility ratio as compared with the fertility ratio of the nation. In other words, in those states in which the fertility ratio is higher than the national average, the number of live births per 100 women 12 years of age and over should also be higher than the national average. Conversely, in states in which the fertility ratio is lower than the national average, so also should the number of live births per 100 women 12 and over be lower.

The variations in the magnitude of the fertility ratio for the states may be compared with the level of the fertility ratio for the nation as a whole by examination of Table 26. This tabulation also permits the same comparison to be made for the number of live births per 100 women 12 and over, and for the number of live births per 100 women 12 and over reporting live births. The number of live births per 100 women 12 and over, the number of live births per 100 women 12 and over reporting live births,[2] and the number of children 0-4 per

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[2]These rates have been referred to as the cumulative fertility rate, and the cumulative reproduction rate, respectively. Cf. Giorgio Mortara, "The Brazilian Birth Rate: Its Economic and Social Factors," in Frank Lorimer et al, Culture and Human Fertility, (Paris: Unesco, 1954), p. 426.

TABLE 26

LIVE BIRTHS PER 100 WOMEN 12 AND OVER, AND LIVE BIRTHS PER 100 WOMEN 12 AND OVER REPORTING LIVE BIRTHS, COMPARED WITH THE FERTILITY RATIO, BY REGIONS AND STATES, BRAZIL, 1940. BRAZIL = 100*

Region and State	Live births per 100 women 12 and over	Live births per 100 women 12 and over reporting live births	Children 0-4 per 100 women 15-49
Brazil	234.6	523.8	64.0
North	260.7	467.4	64.6
Acre (1)	337.2	562.6	87.1
Amazonas	262.0	475.9	69.5
Pará	254.9	456.9	60.9
Northeast	302.5	574.9	67.4
Maranhão	273.5	465.9	66.5
Piauí	284.9	515.6	73.0
Ceará	303.7	598.1	76.0
R. G. do Norte	333.5	638.2	67.4
Paraíba	326.3	635.9	68.8
Pernambuco	298.2	585.6	60.9
Alagoas	303.3	565.2	62.9
East	278.0	524.0	61.8
Sergipe	300.0	569.3	62.7
Bahia	278.2	540.8	62.1
Minas Gerais	293.3	545.7	66.6
Espírito Santo	309.9	563.3	67.6
Rio de Janeiro	292.4	529.2	60.1
Distrito Federal	195.8	348.0	36.5
South	283.2	510.9	63.3
São Paulo	284.6	509.0	59.3
Paraná	293.5	503.9	69.9
Santa Catarina	301.2	534.0	77.8
Rio Grande do Sul	270.6	507.7	65.0
West Central	264.4	483.9	70.9
Goiás	274.0	494.5	70.4
Mato Grosso	244.9	461.5	71.9

TABLE 26 continued

LIVE BIRTHS PER 100 WOMEN 12 AND OVER, AND LIVE BIRTHS PER 100 WOMEN 12 AND OVER REPORTING LIVE BIRTHS, COMPARED WITH THE FERTILITY RATIO, BY REGIONS AND STATES, BRAZIL, 1940. BRAZIL = 100*

Region and State	Index number-live births per 100 women 12 and over	Index number-live births per 100 women 12 and over reporting live births	Index number-children 0-4 per 100 women 15-49
Brazil	100.0	100.0	100.0
North	91.6	88.4	101.0
Acre (1)	118.5	106.4	136.1
Amazonas	92.1	90.0	108.1
Pará	89.6	86.4	95.2
Northeast	106.3	108.7	105.3
Maranhão	96.1	88.1	103.9
Piauí	100.1	97.5	114.1
Ceará	106.7	113.1	118.8
R. G. do Norte	117.2	120.7	105.3
Paraíba	114.7	120.2	107.5
Pernambuco	104.8	110.7	95.2
Alagoas	106.6	106.9	98.3
East	97.7	99.1	96.6
Sergipe	105.4	107.7	98.0
Bahia	97.8	102.3	97.1
Minas Gerais	103.2	103.2	104.1
Espírito Santo	108.9	106.5	105.7
Rio de Janeiro	102.7	100.1	93.9
Distrito Federal	63.8	72.6	57.0
South	99.5	96.6	98.9
São Paulo	100.0	96.3	92.7
Paraná	103.1	96.2	109.3
Santa Catarina	105.8	101.0	121.6
R. G. do Sul	95.1	96.0	101.6
West Central	92.9	91.5	110.8
Goiás	96.3	93.5	110.0
Mato Grosso	86.1	87.3	112.4

*Source: Compiled and computed from data in I. B. G. E. Recenseamento Geral do Brasil (1 setembro de 1940). Censo Demográfico, População e Habitação. Série Nacional, Vol. II. (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1950) passim.
(1) Territory

100 women 15-49, for Brazil, 1950, by regions and states are presented. These rates are then expressed in the form of an index number with the figure for the nation as a whole being equated to 100. Thus, when a state or regional rate is larger than that for the nation, the resulting index number is larger than 100, and vice versa.

Analysis of the results thus obtained, reveals that the number of live births per 100 women 12 and over, as well as the number of live births per 100 women 12 and over reporting live births, show little if any agreement with the fertility ratio.

Of particular significance is the contrast in the level of fertility as expressed by the index numbers, in the West Central region, where the birth rate is without doubt at a very high level. In Mato Grosso, for example, the comparison of the fertility ratio for the state with that for the nation yields an index number of 112.4, which as expected, reveals that the fertility ratio in that state is considerably higher than the national average. Yet, the like index numbers obtained for the number of live births per 100 women 12 and over, and per 100 women 12 and over reporting live births, are only 86.1 and 87.3, respectively. These figures indicate a low rate of reproduction, and cannot be accepted as representing reality. In Rio Grande do Norte, on the other hand, where the fertility ratio is almost equal to the national average, the rates for the number of live births per 100 women 12 and over, and per 100 women 12 and over reporting live births, are much higher than the rates obtained for the nation.

The lack of agreement between the number of live births reported and the fertility ratio has not gone altogether unnoticed. Mortara in considering these figures, states:

> ...the estimated birth rate and the average number of live births by women over 15 years of age in the (sic) Rio Grande do Sul are considerably below the national average, whereas the relationship between the number of children under 10 years and the number of women between 15 and 49 years is a little higher than the average. The contradiction is only apparent, the high level of the latter index being the result of the fairly low level of infant mortality. The same explanation is valid for the (sic) Mato Grosso.
>
> In Pernambuco on the other hand, the estimated birth rate and the average number of live births for women over 15 are above the national average whereas the relationship between the number of children under 10 years and the number of women between 15 and 49 years is considerably below, probably because of the high child mortality rate.[3]

This explanation of the disagreement between the two rates clearly implies that the cause of the disagreement lies in differential mortality among the states, in the early years of life. Thus, when the fertility ratio is high in relation to the number of live births per 100 women 12 and over (or, as in the passage quoted, 15 and over), the cause of the difference is laid at the door of low child mortality, and when the converse is true, the cause is attributed to high child mortality.

Close examination of the data, however, reveals that this explanation is not adequate. If it is true then child mortality obviously must be lower in the highly rural and under-developed state of Piauí,

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[3] Op. cit., p. 421.

than in the nation's most progressive and urban area, the Federal District. Also, child mortality must, if this explanation is accepted, be lower in the most remote frontier state of Mato Grosso than in the nation's most industrialized and urbanized state, São Paulo. Obviously, the validity of these conclusions, and other similar ones that can be deduced from the data, is at fault.

It seems certain that the high level of the fertility ratio in Mato Grosso for example, is the result of a high birth rate, and that it is high in spite of high child mortality and not because of low child mortality. That the number of live births per 100 women 12 and over in Mato Grosso is considerably below the national average, is very likely the result of faulty memories on the part of the respondents. Although it would seem that the number of children a woman has brought into the world would be the one figure best known by her, the data strongly suggest that a great deal of error was introduced into them, by erroneous responses.

The experience of the United States Bureau of the Census is similar. An attempt was made to secure a measure of the birth rate, before the establishment of birth registration areas and the availability of reliable birth statistics. The attempt consisted of asking essentially the same questions that were asked of the Brazilian population. Analysis of the data obtained, revealed its unreliability, which was attributed to faulty responses.

Nativity and Occupational Differentials in Fertility

Since the data pertaining to the number of children brought into

the world by Brazilian women is not worthy of confidence, it becomes necessary to turn to other sources for materials that will throw some light on nativity and occupational differentials in fertility.

The first volume of complete results of the 1950 census to appear, that for the state of São Paulo, contains a series of tabulations related to family groups. Although this information was secured in 1940 as well, it was not included in the census reports for that year.

This information makes it possible to compute the number of children residing with their families on the date of the census, by the nativity and the occupation of the family head. Married children who have established their own households are excluded. The number of families, the number of children, and the number of children per family, are presented in Table 27. In order to permit a comparison of the number of children per family head in each of the categories, with the total figure for the state, an index number for each of the categories has been computed, with the total figure being equated to 100.

Examination of this table indicates that fertility as measured in this somewhat crude manner, is slightly higher among the naturalized than among the native born or the foreign born.

Of greater significance however, is the data pertaining to occupational groups. Here the difference between the number of children residing with their families among persons engaged in agriculture and husbandry, and among persons practicing the liberal professions is very sharp. The index number for the latter is 19.8 points above the state

TABLE 27

NUMBER OF CHILDREN RESIDING WITH THEIR FAMILIES, ACCORDING TO THE NATIVITY AND OCCUPATION OF THE FAMILY HEAD, COMPARED WITH THE NUMBER OF CHILDREN RESIDING WITH THEIR FAMILIES IN THE STATE AS A WHOLE, SÃO PAULO, 1950*

Nativity or Occupation of of family head	Number of Families	Number of Children	Number of Children Per Family	Index Number
São Paulo	1,798,735	4,544,668	2.53	100.0
Native born	1,490,108	3,750,910	2.52	99.6
Naturalized	40,137	109,883	2.74	108.3
Foreign born	268,068	683,250	2.55	100.8
Agriculture and husbandry	735,174	2,227,309	3.03	119.8
Transportation, communication and storage	124,332	298,454	2.40	94.9
Extractive industries	27,749	63,394	2.28	90.1
Consumer goods business	129,523	291,103	2.25	88.9
Processing industries	343,155	759,678	2.21	87.4
Public administration, legislative and law	33,899	73,785	2.18	86.2
Non-remunerated domestic activities and students	104,166	223,684	2.15	85.0
Social activities	38,254	80,749	2.11	83.4
National defense and public safety	19,333	40,118	2.08	82.2
Rendering of services	118,760	241,390	2.03	80.2
Real estate, banking, finance and insurance	20,204	37,448	1.85	73.1
Liberal professions	14,647	25,822	1.76	69.6
All others and undeclared	89,359	181,734	2.03	80.2

*Source: Compiled and computed from data in VI Recenseamento Geral do Brasil, 1950, Estado de São Paulo, Censo Demográfico, (Rio de Janeiro: I. B. G. E., Conselho Nacional de Estatística, 1954), p. 226.

average, and the index number for the former is 30.4 points below the state average. In absolute numbers there were 3.03 children residing with their families per family head engaged in agriculture and husbandry, and only 1.76 per family head earning his or her living in the liberal professions. Persons engaged in real estate, banking, finance and insurance, also revealed low fertility as measured in this way, whereas persons working in transportation, communication and storage, as well as those in the extractive industries, are shown to have high fertility.

Religious Differentials in Fertility

Variations in the rate of reproduction in different religious groups have been observed in several parts of the world. In the United States, Roman Catholics are generally found to be more prolific than other religious groups, largely it is believed, because of the religious ban on the use of contraceptives. The Brazilian people are predominantly followers of the Roman Catholic persuasion. An inquiry into the differentials in fertility if any, among Brazil's religious groups is in order.

In 1950, the Brazilian population was 93.49 percent Roman Catholic, 3.25 percent Protestant, 1.59 percent Spiritualist, 0.08 percent Orthodox, and 0.13 percent Jewish. Other religious groups comprised 0.57 percent of the total population, and 0.79 per cent professed no religion.[4]

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[4] I. B. G. E., Conselho Nacional de Estatística, Serviço Nacional de Recenseamento, VI Recenseamento Geral do Brasil, Censo Demográfico (1 de julho de 1950), Estados Unidos do Brasil, Seleção dos Principais Dados, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1953), p. 1.

Fertility ratios for 1950 were calculated for the three largest religious groups in the country--Roman Catholics, Protestants, and Spiritualists, and are presented in Table 28.

On a national basis, Roman Catholics and Protestants reproduce at about the same rate, as measured by the fertility ratio. The total fertility ratio for Roman Catholics was 65.9, and that for Protestants was 60.1. Spiritualists, however, with a fertility ratio of only 45.0, are reproducing much more slowly than members of other religious groups.

Fertility ratios for Brazil's fourth largest "religious group"--those professing no religion-- were not calculated because of the extreme unbalance between the sexes recorded for the non-religious population. In 1950, 170,629 men and only 103,607 women fell into this category.

The rate of reproduction for Protestants as measured by the fertility ratio is higher than the rate of reproduction for Catholics in five states (Pará, Maranhão, Ceará, Minas Geraes, and the Federal District). In the territory of Amapá, fertility ratios for the two religious groups are practically the same.

It is interesting to note that the greatest differential in the fertility of Roman Catholics and Protestants, is to be found in the two states containing the largest proportion of Protestants--Santa Catarina and Rio Grande do Sul. It is also significant that the Protestants in these two states are in very large measure Lutherans of German birth or origin. The Synodical Federation (Lutheran),

TABLE 23

FERTILITY RATIOS FOR RELIGIOUS GROUPS, BY STATES, BRAZIL, 1950*

Region and State	Children 0-4 per 100 women 15-49		
	Roman Catholics	Protestants	Spiritualists
North			
Guaporé (1)	73.2	71.8	----
Acre (1)	89.8	85.7	----
Amazonas (1)	73.9	72.5	38.9
Rio Branco (1)	84.2	----	----
Pará	67.2	73.7	33.4
Amapá	73.6	73.7	----
Northeast			
Maranhão	64.8	68.1	42.9
Piauí	75.8	68.4	----
Ceará	77.1	84.0	49.4
Rio Grande do Norte	73.3	70.7	44.7
Paraíba	70.2	66.6	46.9
Pernambuco	65.7	62.3	38.2
Alagoas	68.8	60.3	35.4
East			
Sergipe	69.5	58.4	44.5
Bahia	65.6	59.3	39.4
Minas Gerais	67.8	70.0	52.7
Espírito Santo	74.8	72.1	65.9
Rio de Janeiro	67.1	64.9	48.9
Distrito Federal	36.7	37.1	26.6
South			
São Paulo	57.9	55.5	43.7
Paraná	73.5	68.4	56.9
Santa Catarina	83.7	58.0	47.3
Rio Grande do Sul	67.9	57.0	48.2
West Central			
Mato Grosso	77.3	69.4	56.4
Goiás	72.2	70.1	68.8
Brazil	65.9	60.1	45.0

*Source: Compiled and computed from data in I. B. G. E., Conselho Nacional de Estatística, Serviço Nacional de Recenseamento, VI Recenseamento Geral do Brasil, Censo Demográfico (1 de julho de 1950), Seleção dos Principais Dados, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1951, 1952, 1953), passim.

(1) Territory.

whose members are heavily concentrated in the two states in question, claimed 46.9 percent of Brazil's communicant Protestants in 1953.[5]

Birth control measures are practically unknown in Brazil except among the upper classes in urban centers. It seems unlikely therefore, that abstention from their use is responsible for the high level of reproduction of Catholics in Santa Catarina and Rio Grande do Sul.

The possibility that Protestants in these states are more heavily concentrated in urban areas than Catholics, thus explaining the low fertility ratios obtained for them, is not supported by the facts. In Rio Grande do Sul, the municipio containing the capital city held 6.1 percent of the state's Protestants, and 9.2 percent of its Catholics. Like percentages for Santa Catarina show an even greater disparity--1.1 percent and 4.4 percent, respectively. In addition the lower rate of reproduction of Protestants holds true in the municipio containing the capital as well as in the state as a whole. In the municipio of Florianópolis, capital of Santa Catarina, the fertility ratio for Protestants in 1950 was 38.8, whereas the fertility ratio for Catholics was 56.6. In the municipio of Porto Alegre, capital of Rio Grande do Sul, there were 26.9 Protestant children under 5 per 100 Protestant women 15 to 49, whereas there were 37.8 Catholic children under 5 per 100 Catholic women 15 to 49.

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[5]T. Lynn Smith, Brazil: People and Institutions, Revised Revised Edition, (Baton Rouge: Louisiana State University Press), p. 180.

It seems unlikely that the differences observed are primarily due to religious factors. In other states Catholics and Protestants reproduce at about the same rate in the state as a whole and in the capital municipio. The reason for the differential observed probably lies in factors peculiar to the German sub-culture of these two states.

The low fertility ratios of the Spiritualists on the other hand, are attributable to the rural-urban differential in the rate of reproduction. Unfortunately, the data on religion are not further classified by residence in the census. However, some idea of the concentration of the members of this religious group in urban areas may be had by examining the proportions that reside in the municipios containing the capitals of the states. This data is presented in Table 29 along with the fertility ratios for Spiritualists in each of the states, for 1950.

In the nation as a whole, 35.6 percent of all Spiritualists resided in the municipio containing the state capital. Comparable percentages for Protestants and Catholics are much smaller, being only 13.6 percent for the former and 15.1 percent for the latter.

In states such as Amazonas, Pernambuco and Alagoas, where few urban centers in addition to the state capital exixt, the concentration of Spiritualists in the municipio containing the capital is particularly great. In other states, such as São Paulo, and Minas Gerais, where numerous urban centers exist in addition to the state capital, the proportion of Spiritualists residing in it, is smaller. Were a more

TABLE 29

SPIRITUALISM IN THE MUNICIPIO CONTAINING THE CAPITAL AS A PROPORTION OF THE TOTAL NUMBER OF SPIRITUALISTS IN THE STATE, AND FERTILITY RATIOS FOR SPIRITUALISTS, BY STATES, BRAZIL, 1950

Region and State	Total for state	Percent in capital municipio	Number of children 0-4 per 100 women 15-49
North			
Guaporé (1)	----	----	----
Acre (1)	184	36.4	----
Amazonas	1,626	72.4	38.9
Rio Branco (1)	----	----	----
Pará	2,847	81.3	33.4
Amapá (1)	----	----	----
Northeast			
Maranhão	2,017	30.2	42.9
Piauí	507	51.3	----
Ceará	5,903	79.6	49.4
R. G. do Norte	1,744	66.6	44.7
Paraíba	2,691	57.4	46.9
Pernambuco	19,237	71.3	38.2
Alagoas	2,169	72.5	35.4
East			
Sergipe	2,184	68.8	44.5
Bahia	12,458	41.2	39.4
Minas Gerais	113,920	12.3	52.7
Espírito Santo	18,296	7.8	65.9
Rio de Janeiro	64,501	14.6	48.9
Distrito Federal	123,775	----	26.6
South			
São Paulo	242,972	29.5	43.7
Paraná	26,230	18.4	56.9
Santa Catarina	7,537	49.1	47.3
R. G. do Sul	115,552	22.2	48.2
West Central			
Mato Grosso	12,594	11.6	56.4
Goiás	44,198	8.0	68.8
Brazil	824,553	35.6	45.0

Source: Compiled and computed from data in I. B. G. E., Conselho Nacional de Estatística, Serviço Nacional de Recenseamento, VI Recenseamento Geral do Brasil, Censo Demográfico (1 de julho de 1950), Seleção dos Principais Dados, (Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1951, 1952, 1953), passim.

(1) Territory

accurate sub-sorting of the data on religious affiliation by residence possible, the proportion of Spiritualists residing in urban areas, would be greatly increased.

It is interesting to note that in the two states in which the proportion of Spiritualists residing in rural areas is greatest (Mato Grosso and Goiás) the fertility ratio for this religious group is the highest. The municipios containing the capital of these states, contain most of their urban population, while at the same time they hold but small proportions of the Spiritualist population.

Socio-Economic Differentials in Fertility

Brazilian census and statistical materials do not permit the direct study of socio-economic differentials in fertility. Such information as annual income and years of school completed which might give an insight into socio-economic status, is not available. A very rough indication of socio-economic status is to be had from the population that is literate. However, an analysis of the relationship between fertility and literacy in São Paulo's 369 municipios for 1950, indicated no relationship between the two.

Tentative conclusions however, may be reached from isolated studies, and from a consideration of the Brazilian social structure. Although in Brazil color lines tend to run across rather than parallel to class lines, the statement that Brazil's upper and middle classes are predominantly white, whereas its lower classes have much greater concentrations of Negro and Indian blood, is not contested. The very fact that the white population reproduces much more rapidly than the

Negro population points strongly to the probability that the middle and upper classes have birth rates at least equal to those of the lower classes. The following quotation is particularly pertinent:

> In Brazil there is little or no tendency towards a differential fertility favorable to the lower, which are also the blacker and redder classes. Counting only legitimate offspring, the members of the upper classes probably produce as many children on the average as do those of middle and lower class status.
>
> Of the offspring produced, the children of the upper classes undoubtedly survive in larger proportions than the children of the lower and more untutored persons in the society's lower strata. In other words it seems also certain that the net reproduction rate increases as one moves up the Brazilian social ladder.[6]

Confirmation of these views is provided by the quantitative material presented below. Rene Ribeiro gathered data in the city of Recife in 1943 and 1939, which clearly indicate that the middle class (and no doubt the upper class as well), in that city is predominantly composed of white-skinned persons (Table 30).

The "poor class" and the "workmen" class (which Ribeiro places in an intermediate position between the "poor class" and the middle class), contain large proportions of black and of mixed-bloods. It is of particular interest to note that the proportion of blacks and of mixed-bloods decreases from the lower to the higher class, whereas the proportion of whites increases.

Census materials permit the calculation of fertility ratios for the racial groups in the municipio of Recife for 1940, a period that

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[6] Ibid., p. 160.

TABLE 30

THE COLOR COMPOSITION OF SOCIO-ECONOMIC CLASSES IN RECIFE, BRAZIL*

Color	Total population percent(1)	Poor class percent(2)	Workmen percent(3)	Middle class percent(2)
White	50.5	29.3	34.8	95.2
Black	15.3	41.4	22.1	-- -
Mixed	34.1	29.3	28.8	4.8
Undeclared	0.1	-- -	14.3	-- -

*Source: Rene Ribeiro, "Situação Étnica no Nordeste, "Sociologia, Vol. XV, No. 3, (agosto de 1953), p. 212.
(1) Census data, 1940.
(2) Data gathered by author, 1943
(3) Data gathered by author, 1939.

corresponds closely to that for which the data is given. The results of these calculations, as expected, lend support to the idea of relatively high fertility among the upper classes. In the white population of Recife there were 83.3 children under 10 per per 100 women 20-49; in the black (and lower class population) there were only 70.8 children under 10 per 100 women 20-49.

A study by Griffing[7] lends further weight to the hypothesis of higher fertility in the upper class than in the lower class in Brazil.

In this study, data relating to fertility were gathered from students at the Higher School of Agriculture in Vicosa, Minas Gerais.

[7]John B. Griffing, "Natural Eugenics in Brazil," The Journal of Heredity, Vol. XXI, No. 1, (January, 1940) pp. 13-16.

There is no doubt that the students of that institution were drawn from the upper or at least the middle classes. In a nation whose population is 50 percent illiterate, the lower classes do not possess either the financial means or the educational background necessary for university study. Similar information was also gathered from laborers at the Higher School of Agriculture, and from "individuals of the lower economic levels of the community, both town and country."

The results of the study which here concern us, are presented in Table 31. Families of students from Brazil as a whole, as well as

TABLE 31

COMPARISON OF SIZE OF FAMILY IN SUPERIOR AND LOWER CLASSES FOR GROUPS IN BRAZIL*

Where born	Class	Cases	Living children	Deceased children
Total for Brazil	Student	235	6.76	1.48
Minas, rural	Student	80	8.58	2.06
Minas	Laborers	54	4.85	3.59

*Source: John B. Griffing, "Natural Eugenics in Brazil," The Journal of Heredity, Vol. XXXI, No. 1, (January, 1940), p. 15.

families of students from the rural portion of Minas Gerais, were found to have more living children than families of laborers from Minas Gerais, by a considerable margin. It is also interesting to note that families of laborers had a substantially larger number of deceased children than those of students. If living children and deceased children are added for families of laborers and for families of students from Brazil as a

whole, these two groups of families are found to have had practically the same number of births--3.44 for the former and 3.24 for the latter.

Although these data are not conclusive because of the small sample obtained, they strongly suggest in agreement with other data that can be brought to bear on this matter, that in Brazil there is a direct relationship between social and economic status and the rate of reproduction.

CHAPTER VIII

SUMMARY AND CONCLUSIONS

This study of the different rate at which various segments of the Brazilian population reproduce has yielded some interesting and significant results. In the following pages these results are briefly summarized.

(1) The level of the rate of reproduction in Brazil is extremely high. Only three of the 53 areas of the world for which reliable birth rates were available in 1950, had a higher birth rate than that of Brazil. Consequently, population growth has been very rapid. With an increase of 193 percent from 1900-1950 Brazil came close to tripling its numbers in fifty years.

(2) The population of Brazil is highly rural. Only one quarter of its people lived in urban areas in 1950. The fertility of persons living in urban, suburban, and rural areas varies considerably in Brazil. Highest fertility is to be found in the most rural portions of the nation's territory, and lowest fertility in the most urban ones. Analysis of the states of Sao Paulo, Santa Catarina, and Bahia revealed the depressing effect on the fertility of the inhabitants of the surrounding territory of proximity to large urban centers. Certain highly rural areas of Bahia were found to have low fertility as the result of a low proportion of males in the reproductive ages, caused by migration from those areas.

(3) The negro segment of the Brazilian population is revealed to be reproducing at a slower rate than either the white or

mixed-blood segments. Whites and mixed-bloods are reproducing at almost the same rate, with the mixed-bloods having a slightly higher fertility ratio on a national basis, although considerable variation occurs among the states. The low fertility of Negroes is a true racial differential in fertility, and is found throughout the nation's territory in both urban and rural areas. This differential is probably the result of a handicap in mating suffered by Negro women. This phenomenon is resulting in a progressive "bleaching" of the population.

(4) Consistently high fertility ratios for all the residential and racial categories occur in: the remote frontier sections of the nation; in the highly rural and under-developed northeastern states, and in states in which the descendents of Nineteenth Century European immigrants have maintained culture traits conducive to high fertility. Low fertility in all the racial and residential categories is found in the nation's most urban and industrialized areas.

(5) Highest fertility among the occupational groups in São Paulo occurs in families whose heads are engaged in agriculture and husbandry. Lowest fertility occurs among families whose heads earn a living in the liberal professions. Catholics and Protestants reproduce at almost the same rate. Spiritualists, Brazil's third largest religious group, have much lower fertility than either Protestants or Catholics because of their concentration in urban areas. Although not conclusive, the data that can be brought to bear on socio-economic differentials in fertility, strongly suggest a direct relationship between status and fertility in Brazil--the higher the status the higher the fertility.

BIBLIOGRAPHY

Azevedo, Fernando de, Brazilian Culture. New York; The Macmillan Company, 1950

Beegle, Allan, and Smith, T. Lynn, Differential Fertility in Louisiana. Louisiana State University Agricultural Experiment Station, Louisiana Bulletin No. 403, June, 1946.

Brunner, Edmund de S., and Kolb, J. H., Rural Social Trends. New York: McGraw-Hill Book Company, 1933.

Carr-Saunders, A. M., Population Problems, a Study in Human Evolution. Oxford: Clarendon Press, 1922.

Davis, Kingsley, The Population of India and Pakistan. Princeton, New Jersey: Princeton University Press, 1951.

Duncan, Hannibal Gerald, Race and Population Problems. New York: Longmans Green & Company, 1929.

Edin, Karl, and Hutchinson, Edward P., Studies of Differential Fertility in Sweden. London: P. S. King and Sons, Ltd., 1953.

Ewbank, Thomas, Life in Brazil, or a Journal of a Visit to the Land of the Cocoa and the Palm. New York: Harper Brothers, 1856.

Freyre, Gilberto, Casa Grande e Senzala. Vol. I. Rio de Janeiro: Jose Olympio, 1946.

Glass, D. V., The Struggle for Population. Oxford: Clarendon Press, 1936.

Graunt, John, Natural and Political Observations Made Upon the Bills of Mortality. Walter F. Willcox, Ed., Baltimore: The Johns Hopkins Press, 1939.

Griffing, John B., "Education and Size of Family in China", The Journal of Heredity, Vol. XVII, No. 9, (September, 1926).

Griffing, John B., "Natural Eugenics in Brazil", The Journal of Heredity, Vol. XXXI, No. 1, (January, 1940).

Hatt, Paul K., Backgrounds of Human Fertility in Puerto Rico. Princeton, New Jersey: Princeton University Press, 1952.

Huber, Michel, Bunle, Henri, and Boverat, Fernand, La Population de la France, Son Évolution et Son Pérspectives. Paris: Librarie Hachette, ca. 1939.

I. B. G. E., Conselho Nacional de Estatística, Servico Nacional de Recenseamento, VI Recenseamento Geral do Brasil. Censo Demográfico (1 de julho de 1950), Seleção dos Principais Dados. Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1951, 1952, 1953.

I. B. G. E., Estudos de Estatística Teorica e Aplicada, Estatística Demográfica No. 8. Características Demográficas do Estado da Bahia. Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1949.

I. B. G. E., Estudos de Estatística Teórica e Aplicada, Estatística Demográfica No. 4. Estimativas da Taxa de Natalidade para o Brasil, as Unidades da Federação e as Principais Capitais. Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1945.

I. B. G. E., Estudos de Estatística Teórica e Aplicada, Estatística Demográfica No. 9. Estudos Sobre a Fecundidade da Mulher no Brasil, Segundo o Estado Conjugal. Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1949.

I. B. G. E., Estudos de Estatística Teórica e Aplicada, Estatística Demográfica No. 14. Estudos Sobre a Natalidade e a Mortalidade no Brasil. Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1952.

I. B. G. E., Estudos de Estatística Teórica e Aplicada, Estatística Demográfica No. 15. Estudos Sobre a Natalidade em Algumas Grandes Cidades do Brasil. Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1953.

I. B. G. E., Estudos de Estatística Teórica e Aplicada, Estatística Demográfica No. 10. Pesquisas Sobre a Natalidade no Brasil. Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1950.

I. B. G. E., Estudos de Estatística Teórica e Aplicada, Estatística Demográfica No. 16. Pesquisas Sobre a Natalidade no Brasil. 2a Serie. Rio de Janeiro: Conselho Nacional de Estatística, I. B. G. E., 1953.

I. B. G. E., Estudos de Estatística Teórica e Aplicada, Estatística Demográfica No. 13. Pesquisas Sobre o Desenvolvimento da População do Brasil. Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1951.

I. B. G. E., Estudos de Estatística Teórica e Aplicada, Estatística Demográfica No. 6. A Prolificidade da Mulher, Segundo a Idade Inicial da Atividade Reprodutora no Brasil. Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1949.

I. B. G. E., Recenseamento Geral do Brasil (1 de setembro de 1940). Censo Demográfico, População e Habitação, Serie Regional. Rio de Janeiro: Serviço Gráfico do I. B. G. E., 1950, 1952.

Innes, J. W., "Class Birth Rates in England and Wales, 1921-1931", The Milbank Memorial Fund Quarterly, Vol. XIX, No. 1, (January, 1941).

Jurkat, Ernest, "Prospects for Population Growth in the Near East", in Demographic Studies of Selected Areas of Rapid Growth, Proceedings of the Round Table on Population Problems. New York: Milbank Memorial Fund, 1944.

Kiser, Clyde V., "The Demographic Position of Egypt", in Demographic Studies of Selected Areas of Rapid Growth, Proceedings of the Round Table on Population Problems. New York: Milbank Memorial Fund, 1944.

Kiser, Clyde V., Group Differences in Urban Fertility, A Study Derived from the National Health Survey. Baltimore: The Williams & Wilkins Company, 1942.

Kiser, Clyde V., "Intra-Group Differences in Birth Rates of Married Women", The Milbank Memorial Fund Quarterly, Vol. XIX, No. 2, (April, 1941).

Kiser, Clyde V., "Variations in Birth Rate According to Occupational Status, Family Income and Educational Attainment", The Milbank Memorial Fund Quarterly, Vol. XVI, No. 1, (January, 1938).

Koster, Henry, Travels in Brazil. Vol. II. Philadelphia: M. Carey and Sons, 1817.

Landry, Adolphe, Traité de Demographie. Paris: Payot, 1949.

Lawson, Herbert D., "Differential Reproduction in China", The Quarterly Review of Biology, Vol. X, No. 3, (September, 1935).

Lorimer, Frank, and Osborn, Frederick, Dynamics of Population. New York: The Macmillan Company, 1934.

Moore, Wilbert E., "Attitudes of Mexican Factory Workers Toward Fertility Control", Approaches to Problems of High Fertility in Agrarian Societies, Papers Presented at the 1951 Annual Conference of The Milbank Memorial Fund. New York: The Milbank Memorial Fund, 1952.

Mortara, Giorgio, "The Brazilian Birth Rate: Its Economic and Social Factors", in Lorimer, Frank, et al. Culture and Human Fertility. Paris: UNESCO, 1954.

Myrdal, Alva, Nation and Family, the Swedish Experiment in Democratic Family and Population Policy. New York: Harper and Brothers, 1940.

Myrdal, Gunnar, Population, A Problem for Democracy. Cambridge: Harvard University Press, 1940.

Nelson, Lowry, Rural Cuba. Minneapolis: The University of Minnesota Press, 1950.

Notestein, Frank W., "Class Differences in Fertility", The Annals of the American Academy of Political and Social Science, Vol. CLXXXVIII, (November, 1936).

Notestein, Frank W., "Differential Fertility in the East North Central States", The Milbank Memorial Fund Quarterly, Vol. XVI, No. 2, (April, 1930).

Oliveira Vianna, F. J., Evolução do Povo Brasileiro. São Paulo: Monteiro Lobato e Cia., ca. 1922.

Oliveira Vianna, F. J., Populações Meridionais do Brasil. São Paulo: Companhia Editora Nacional, 1933.

Oyler, Merton D., Fertility Rates and Migration of Kentucky Population, 1920 to 1940, as Related to Communication, Income and Education. Reprint of Kentucky Agricultural Experiment Station Bulletin 469, November, 1944.

Pearl, Raymond, Studies in Human Biology. Baltimore: Williams & Wilkins Company, 1924.

Ramos, Arthur, The Negro in Brazil. Washington: The Associated Publishers, Inc., 1939.

Reuter, Edward Byron, Population Problems. Philadelphia: J. B. Lippincott Company, 1923.

Ribeiro, Rene, "Situação Étnica no Nordeste", Sociologia, Vol. XV, No. 3, (agosto de 1953).

Rios, Jose Arthur, "Mudanças na Distribuição Racial no Estado do Rio", Sociologia, Vol. XII, No. 2, (maio de 1950).

Rugendas, João Mauricio, Viagem Pitoresca Através do Brasil. Sao Paulo: Livraria Martins Editora, 1941.

VI Recenseamento Geral do Brasil, 1950. Estado de São Paulo, Censo Demográfico. Rio de Janeiro: I. B. G. E., Conselho Nacional de Estatística, 1954.

Smith, T. Lynn, Brazil: People and Institutions, Revised Edition. Baton Rouge: Louisiana State University Press, 1954.

Smith, T. Lynn, The People of Latin America. MS.

Smith, T. Lynn, Population Analysis. New York: The McGraw-Hill Book Company, 1948.

Smith, T. Lynn, "The Reproduction Rate in Latin America", Eugenical News Quarterly, September, 1953.

Smith, T. Lynn, and Marchant, Alexander, Eds. Brazil: Portrait of a Half a Continent. New York: The Dryden Press, 1951.

Solari, Aldo E., Sociologia Rural Nacional. Montevideo: Biblioteca de Publicaciones de la Faculdad de Derecho y Ciencias Sociales de la Universidad de Montevideo, 1953.

Sorokin, Pitrim A., Zimmerman, Carle C., and Galpin, Charles J. A Systematic Sourcebook of Rural Sociology, Vol. I. Minneapolis: The University of Minnesota Press, 1930.

Taeuber, Irene B., and Beal, Edwin G., "The Dynamics of Population in Japan", in Demographic Studies of Selected Areas of Rapid Growth, Proceedings of the Round Table on Population Problems. New York: Milbank Memorial Fund, 1944.

Taylor, Carl C., Rural Life in Argentina. Baton Rouge: Louisiana State University Press, 1948.

Thomas, Dorothy Swaine, Social and Economic Aspects of Swedish Population Movements, 1750-1933. New York: The Macmillan Company, 1941.

Thompson, Warren S., Population Problems. New York: McGraw-Hill Book Company, Inc., 1953.

Thompson, Warren S., Ratio of Children to Women, 1920, Census Monograph XI. Washington: United States Government Printing Office, 1931.

Tucker, George, Progress of the United States in Population and Wealth in Fifty Years as Established by the Decennial Census. New York: Press and Hunt's Merchants' Magazine, 1843.

United Nations, Demographic Yearbook, 1953. New York: Statistical Office of the United Nations, 1953.

United Nations, Demographic Yearbook, 1954. New York: Statistical Office of the United Nations, 1954.

Whelpton, P. K., "Geographic and Economic Differentials in Fertility", The Annals of the American Academy of Political and Social Science, CLXXXVIII, (November, 1936).

Whetten, Nathan L., Rural Mexico. Chicago: The University of Chicago Press, 1948.

Willcox, Walter F., Studies in American Demography. Ithaca, New York: Cornell University Press, 1940.

Willems, Emilio, "Race Attitudes in Brazil", The American Journal of Sociology, Vol. LIV, No. 5, (March, 1949).

Wright, Harold, Population. New York: Harcourt, Bruce and Company, 1923.

BIOGRAPHICAL ITEMS

John Van Dyke Saunders was born in Porto Alegre, Rio Grande de Sul, Brazil, in 1930. He received his elementary and high school education in Brazil and in Argentina. In June, 1951, he was awarded a Bachelor of Arts degree, and in June, 1955, a Master of Arts degree by Vanderbilt University. He was a delegate to the First International Colloquim on Luso-Brazilian Studies, and travelled extensively in Brazil, collecting representative artifacts and doing photographic work for the Institute for Brazilian Studies at Vanderbilt University. While at the University of Florida, he made a survey of Bradford County, Florida, for the Medical Center Study of the University of Florida, at the request of the Bradford County Hospital Corporation; was Graduate Assistant in the School of Inter-American Studies, and the recipient of a University Fellowship. He is a member of the American Sociological Society, the Rural Sociological Society, the Southern Sociological Society, and the American Academy of Political and Social Science. He belongs to Alpha Kappa Delta, honorary sociology fraternity, Phi Alpha Theta, honorary history fraternity, and was awarded membership in the Fundacion Internacional Eloy Alfaro, for service in the inter-American field.

This dissertation was prepared under the direction of the chairman of the candidate's supervisory committee and has been approved by all members of the committee. It was submitted to the Dean of the College of Arts and Sciences and to the Graduate Council and was approved as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

August 13, 1955

C. T. Byers
Dean, College of Arts and Sciences

R. E. Grinter
Dean, Graduate School

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